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American Pharmacy during the Association Year Concluded "Has Made Substantial Progress, Has Accomplished Much, Has Not for an Instant Been Idle." It Enters upon Another Year with a Purpose to Progress and Achieve.

Vol. XXI, No. 9 SEPTEMBER, 1932

JOURNAL

OF THE

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AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

CONTENTS

Frontispiece and Sketch—Dr. Hans Heger 843
The American Association of Colleges of Pharmacy at Toronto 844
Editorial:
- The Toronto Meeting 845
- International Conventions a Success 848
- The Law Enforcement Conference Deals with Fundamental Pharmaceutical Problems 849
- The Pharmacopœia 850
- Remington Honor Medal Award for 1932 852

Scientific Section:
- The Extraction and Assay of Crude Ergot—Thompson 853
- Digitalis Fat—the Petroleum-Ether Extractive of Digitalis Purpurea Linné—Schwarz 856
- The Antiseptic Value of Phenol Ointments—Husa and Radin 861
- Overcoming Interference from Volatile Bases in Assay of Mydriatic Drugs—Ewe 870

Bibliography of Pharmaceutical Research—DuMez 874
What about Drug Extraction?—Scoville 877
An Experimental Study of the Deterioration and Assay of Spirit of Ethyl Nitrite—Andrews (*Concluded*) 886
The Bactericidal Efficiency of Iodine Solutions—Gershenfeld and Miller 894
Resolutions Adopted by the American Pharmaceutical Association at Its Eightieth Annual Meeting at Toronto, Canada, August 23 to 27, 1932, upon Recommendation of the House of Delegates, through Its Committee on Resolutions—Adams 903
Address of the President of the American Pharmaceutical Association—Adams 908
Address of Chairman of the House of Delegates—Roach 919
Address of the President: Some Proposed Standards—Leigh 921
Address of the President of the National Association of Boards of Pharmacy—Winne 934
A Message from Secretary Hugh N. Linstead, British Pharmaceutical Society 953
Address by T. Gladstone Hines, President of the British Pharmaceutical Society 953
Address by President G. A. Burbidge of the Canadian Pharmaceutical Association 955
Report of the Fairchild Scholarship Examination 960
The Winner of the Fairchild Scholarship for 1932 962
Association Business 963
Pharmacy Week Begins October Ninth 981
List of Registrants, Annual Meeting, A. Ph. A., Toronto, Canada 982
Advertising—Cover Pages 2, 3 and 4, and pp. I–XXIV.

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THE 81st ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN MADISON, WISCONSIN, IN 1933.

The 1933 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Madison.

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The Canadian-American Pharmaceutical Convention a Stimulus and an Inspiration.

A message and an estimate of the recent meeting of the American Pharmaceutical Association in Canada.

BY DR. R. B. J. STANBURY.

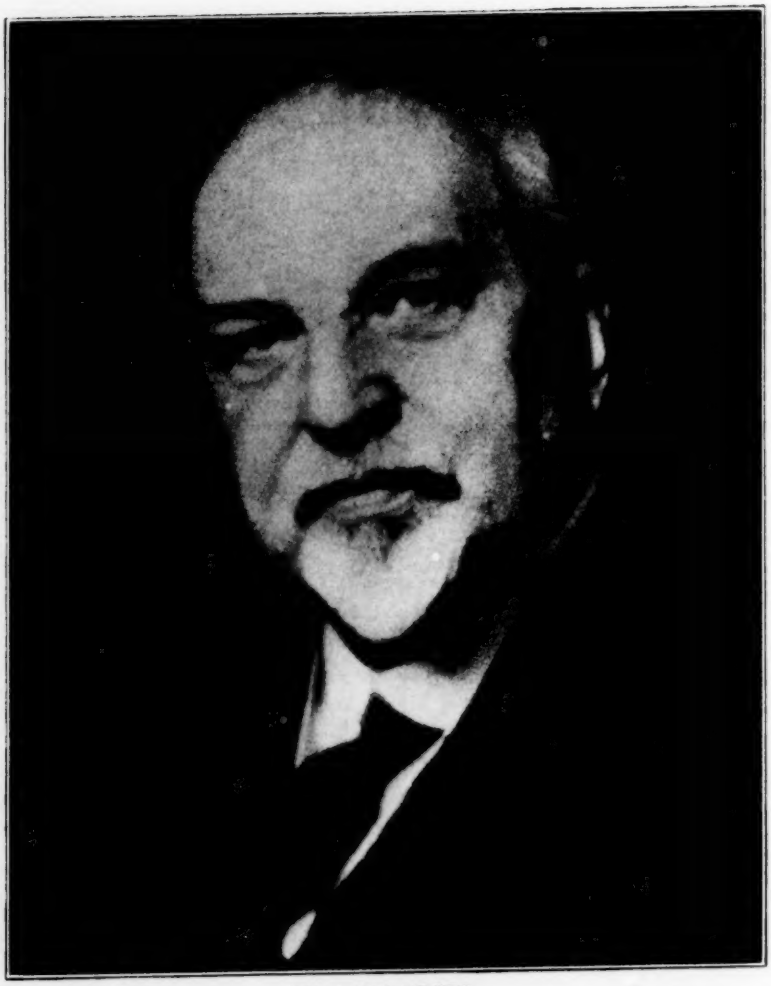
Local Secretary of the Canadian-American Convention and Secretary of the Canadian Pharmaceutical Association.

THE Canadian-American Pharmaceutical Convention was unique in that it drew together representatives of the three great Anglo-Saxon Pharmaceutical Associations—those of the United States, Great Britain and Canada.

It has undoubtedly brought about a better understanding both pharmaceutically and nationally between pharmacists of these three countries.

It has served as a stimulus and inspiration to the members of the three organizations, who, on account of contact with one another have received a new vision of their opportunities and responsibilities.

Canadian druggists feel happy in having had an opportunity of giving a welcome to our cousins from across the line and our brothers from across the sea. Pharmacy is a profession of service, and we are grateful for having had some share in cementing its bonds.



DR. HANS HEGER.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXI SEPTEMBER, 1932 No. 9

DR. HANS HEGER.

Dr. Hans Heger, elected an honorary member by the AMERICAN PHARMACEUTICAL ASSOCIATION at its eightieth annual meeting, held in Toronto, was born September 7, 1855, in Troppau, Austrian Silesia. During his earlier years he was active as "Apotheker-praktikant" in Friedrich; he studied in Vienna and passed the examination as *Mag. pharm.* in 1876, and in the following year went to Paris. On his return he became associated with the pharmacy of Dr. Hellmann in Vienna. He engaged in research and entered the University of Heidelberg, where, in 1881, he earned the Doctor's degree, majoring in Chemistry.

His active journalistic work began in 1883, when he took over the *Pharmazeutische Post;* in 1887, he established *Zeitschrift für Nahrungsmitteluntersuchung und Hygiene* (Periodical on Food Investigation and Hygiene)—"Oesterreichischen Chemiker Zeitung," and the supplement to the *Post*—the "Pharmazeutischen Monatsheften," all of which he still conducts with the zeal of earlier years.

The Austrian Government is indebted to Dr. Heger for the "Codex Alimentarius Austriacus." He was co-worker on the first and second editions of the "Realen-Zyklopaedie der gesamten Pharmazie" and the "Grossindustrie Oesterreichs" (Cyclopedia of Pharmacy and the Austrian industries).

Dr. Heger is author of "Synopsis Neuer Arzneimittel (Newer Remedies), a 4-volume work "Die Wohlfartseinrichtungen Oesterreichs," 1848–1898; "Die Apothekenbilder von Nah und Fern" (studies of Pharmacy of near and far); "Uebersicht der Gifte und Gegengifte" (a study of poisons and antidotes); a brochure "Die Entwickelung der Pharmazie in 19 Jahrhundert" (the development of Pharmacy in the 19th century); "Die Pharmazie im Kriege" (Pharmacy in the War). Since 1885 he has issued "Pharmazeutischen Almanach—ein Adressbuch der Oesterreichisch-Ungarischen Pharmazie (Pharmaceutical Almanac—an address book of Austrian-Hungarian Pharmacy).

He has taken an active part in organizations—since 1898 he has been secretary of the Austrian Pharmaceutical Society; he is honorary member of the German Pharmaceutical Society, of the Society for the History of Pharmacy, of the pharma-

ceutical societies in Stockholm, Helsingfors, Moscow, Brussels, Antwerp, Budapest; German Apothecaries' Society of New York, corresponding member of the pharmaceutical societies of Petersburg, Paris, Bucharest and Prague. The 75th anniversary of his birthday was celebrated by pharmacists throughout Europe, joined by citizens of his country, he received congratulations from pharmacists and members of related professions throughout the world.

It pleases us to welcome Dr. Heger as an honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY AT TORONTO.

THE annual meeting of the American Association of Colleges of Pharmacy held at Toronto August 22nd–24th was outstandingly most successful. The careful arrangements made for our convenience and pleasure by our Canadian confrères left nothing to be desired. Dean Heebner, of the School of Pharmacy of the University of Toronto, and Professor Clark of the same institution, greatly assisted in making the meeting a success, and our thanks are gratefully extended to them.

The address of President Townes R. Leigh, which appears in this issue of the JOURNAL, was a highlight of the meeting. The capable and forceful way in which it was delivered assured it a very favorable reception. The high ideals for pharmaceutical education set forth by Dean Leigh are stars to be aimed at by the member-colleges.

The organization of the American Council on Pharmaceutical Education in conjunction with the National Association of Boards of Pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION is an event of great importance. There is every reason to believe that this organization will do for pharmaceutical education what similar organizations have done for medical and dental education. The Association is hopeful that the great possibilities of the organization will be accomplished.

The reports of the various standing committees showed careful thought, and progress was indicated in each of them. The papers by Miss Esther Garvin and Dean R. L. Greene were thought-provoking and very favorably received.

The annual dinner of the Association was one of the most pleasant and profitable functions ever enjoyed by the members. The annual address, delivered by Hon. W. G. Martin, Minister of Public Welfare of the Province of Ontario, was a masterpiece, and enjoyed by all.—C. B. JORDAN.

OFFICERS OF AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY.

The officers elected for the ensuing year by the American Association of Colleges of Pharmacy are: *President*, Charles H. Stocking, University of Michigan, Ann Arbor; *Vice-President*, Robert C. Wilson, University of Georgia, Athens; *Secretary-Treasurer*, Zada M. Cooper, University of Iowa, Iowa City. **Executive Committee:** *Chairman*, C. B. Jordan, Purdue University, Lafayette, Ind.; Townes R. Leigh, University of Florida, Gainesville; A. G. DuMez, University of Maryland, Baltimore.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase Street, BALTIMORE, MD.

THE TORONTO MEETING.

THE joint meeting arranged for with the Canadian Pharmaceutical Association five years ago was expected to bring about close professional relations between the pharmacists of Canada and the United States and between their organizations. It was intended to also provide an opportunity for the consideration of questions of mutual interest and for a helpful exchange of experiences and information. It did all of these things and more.

The presence and participation of four officials, including the president and secretary, of the Pharmaceutical Society of Great Britain added greatly to the interest and value of the meeting and gave it more of the scope and character of a friendly conference between the pharmacists of the English speaking peoples.

There can be no question that the problems of pharmacy in Canada and the United States are largely the same and that they will become more alike. Friendly understanding and honest coöperation will assist in solving them. Much the same can be said relative to relations of pharmacy in Canada, the United States and Great Britain. It is very encouraging that their representatives have had a visit and that personal relations have been established.

The desirability of another Canadian-American Convention, to be held in the United States, has been agreed to. The interchange of fraternal delegates, annually, has been suggested and will no doubt be carried out.

The exchange at certain intervals of fraternal delegates between the Pharmaceutical Society of Great Britain and the AMERICAN PHARMACEUTICAL ASSOCIATION is being considered. So the convention can be declared a success if it did no more than bring about these international friendships and understandings among pharmacists.

President Adams' address was written to impress what had been done for pharmacy during the year of depression just closed. He substituted record for regret, accomplishment for excuse. He set the note for the meeting.

The attendance was very good, representing every state in the Union except Arizona, New Mexico and Nevada. The entertainment was exceptional in extent and in character and our Canadian friends distinguished themselves for friendliness and whole-hearted hospitality.

What were the outstanding events of the business sessions? A few may be emphasized. The determination to complete the Headquarters Building, to concentrate the scattered activities of the ASSOCIATION and to develop new functions as rapidly as possible; the general acceptance of the four-year course of education as placing pharmacy on a professional basis with the expressed determination of making it effective as to cultural as well as technical training.

The agreement of the AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy to establish the American Council on Pharmaceutical Education consisting of three members from each organization with one advisory member from the American Council on Education, to establish standards as rapidly as may be

possible, for schools and colleges of pharmacy and to approve those that accept and maintain these standards, for the guidance of Boards of Pharmacy in recognizing those whose graduates will be accepted for examination. The Council will have as members, retail pharmacists, board members, teachers and association officials and will be truly representative of the views and opinions of pharmacy. Its work will be financed by the three organizations and will be looked forward to with great interest, as one of the most important activities for the benefit of pharmacy.

The agreement of the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy to approve one year of practical experience as sufficient for the purpose now that the four-year course is in effect, and to coöperate toward securing its adoption in the various state laws as rapidly as possible. This is another forward step toward uniformity in the requirements to enter pharmacy.

The completion of the text for the fourth edition of the Pharmaceutical Syllabus, covering the four-year course, was another important accomplishment of the Toronto meeting and the book will be available within a few months. While the cultural and general science subjects have been given proper recognition, the emphasis has been placed on a good sound training in pharmacy and especially in the practical phases of its work.

The Conference on Pharmaceutical Research established a $500.00 research fellowship, open to students of all the colleges of pharmacy, and the Committee on Research of the AMERICAN PHARMACEUTICAL ASSOCIATION announced the award of a fellowship of $1000 to the School of Pharmacy of the University of Florida for a study of drug extraction. It is expected that the study will be continued for several years and the committee has arranged a program covering the investigation of every phase of this basic question.

The Conference of Pharmaceutical Law Enforcement Officials gave the most of its two sessions to a study of the proposed Uniform State Narcotic Law. They had the advice and coöperation of Messrs. A. L. Tennyson and H. T. Nugent of the U. S. Bureau of Narcotics, Colonel C. H. L. Sharman, Chief of Narcotic Division, Ottawa, and Chairman Thomas Marns, of the Law Committee of the Pharmaceutical Society of Great Britain. Needless to say, the Conference will submit a number of practical suggestions toward the improvement of the proposed law. Among them, is the proposal that the sale and distribution of all narcotics, including the so-called exempt preparations, be limited to pharmacists in order to center responsibility and secure effective control. A resolution to this effect was advocated by the Conference and adopted by the AMERICAN PHARMACEUTICAL ASSOCIATION.

The Conference of Pharmaceutical Association Secretaries held two interesting sessions and discussed association activities and how to make their work more effective. Particular attention was given to improvement in the programs of the state association meetings, and to the helpful extension of the activities of these associations.

Two new efforts were undertaken by the ASSOCIATION. On the recommendation of President Adams, a committee will be appointed to study the vocational opportunities in the pharmaceutical field and to suggest any methods or procedures by which unemployment may be reduced and suffering on the part of those unemployed be relieved.

Another committee was provided to coöperate with the Federal Food and Drug Administration in working out reasonable and practical tolerances for prescriptions as compounded and dispensed by practicing pharmacists. The Administration has established in coöperation with the producers, tolerances for ampuls, tablets, pills, etc., which have been very helpful, since absolute accuracy is practically unobtainable. In view of recent activities of enforcement agencies in examining prescriptions for variations as to content and strength, it is believed to be equally necessary to establish tolerances for these extemporaneously prepared pharmaceuticals. The work of this committee will be a great protection as well as a helpful guide to practicing pharmacists and will, undoubtedly, lead to greater accuracy in filling prescriptions.

It was reported that a similar effect is being made to establish tolerances for prescription containers, particularly bottles and jars. Pharmaceutical practice would be made much more accurate if variations in the content of prescription containers can be reduced to certain agreed-upon tolerances.

The five sections, Scientific, Education and Legislation, Practical Pharmacy and Dispensing, Commercial Interests and Historical, had splendid programs during which about two hundred papers were read or presented by title. It is impossible to even review these titles. Every phase of pharmacy, scientific, practical, educational, legislative, commercial and historical, was considered. Among the most important topics were the progress in revision of the United States Pharmacopœia, National Formulary and Recipe Book, the Canadian Formulary and the British Pharmacopœia; prescription pricing; the St. Louis Survey; the U. S. P.-N. F. prescription ingredient survey; sections on practical pharmacy and dispensing at the state association meetings; the histories of the state association; Pharmacy Week; Pharmacy Corps Bill; better control of hospital pharmacy; the Pharmacy Exhibit at the Chicago Fair in 1933; U. S. P. and N. F. exhibits at state and national medical meetings; better coöperation between pharmacists, physicians and dentists with a special exhibition of U. S. P. and N. F. preparations of interest to dentists; costs of medical care and the importance of pharmacy in public health; recognition of pharmacy in governmental services; the Capper-Kelly Bill; manufacturers' excise tax; endowments for pharmacy; the sale and distribution of exempt narcotics.

The meeting closed with a General Session on Friday evening at which thirty-five resolutions were adopted, the officers for 1932–1933 were installed with W. Bruce Philip as *President*, and Dr. Charles F. Heebner of Toronto as *Honorary President*, and the Ebert Prize awarded to Dr. Z. F. Klan of Praha, Czechoslovakia for his paper on "Influence of Period of Vegetation and Development of Plant on the Alkaloidal Content of Hyoscyamus Niger, L," the first time that the award has been made to a foreign pharmacist. Dr. Klan studied in America and is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The nominees to be submitted to the members for a mail ballot are: *President*, Ambrose Hunsberger, Pa., Thomas Roach, Oklahoma and R. L. Swain, Maryland; *First Vice-President*, E. N. Gathercoal, Illinois; C. Leonard O'Connell, Pennsylvania; Robert P. Fischelis, New Jersey; *Second Vice-President*, John C. Krantz, Jr., Maryland; Walter F. Meads, Iowa; W. H. Glover, Massachusetts. *Councillors:* H. V. Arny, New York; Wm. B. Day, Illinois; T. J. Bradley, Massachusetts;

Walter D. Adams, Texas; C. B. Jordan, Indiana; H. C. Christensen, Illinois; A. R. Bliss, Jr., Tennessee; Gordon L. Curry, Kentucky; L. L. Walton, Pennsylvania.—E. F. K.

INTERNATIONAL CONVENTIONS A SUCCESS.

THE joint convention of the AMERICAN PHARMACEUTICAL ASSOCIATION and of the Canadian Pharmaceutical Association at Toronto proved that international conventions of pharmaceutical associations are a success. The respective representatives of Great Britain, of Canada and of the United States delivered worthwhile messages. Men from Great Britain, representing pharmacy, pictured the importance in which they held their profession. Among them Pharmacy has had centralized power—they control the education, licensing, the regulation of drug stores and the sale of medicines and poisons. They have the right of contract, which means that a manufacturer can stipulate a resale price and resale prices are controlled for the benefit of all—the shopkeeper and the public, the druggist and the retail merchant. They showed that more power should be given to the pharmaceutical associations by each state—its advantages to the public have been demonstrated by the activities of British associations.

The address of President F. Gladstone Hines, of the British Pharmaceutical Society, before the General Session was a masterpiece—it was stirring and impressive and a striking presentation of what British pharmacists have accomplished—there is culture behind their attainments.

All Canadians were stirred by the recent Imperial Economic Conference, held in Ottawa, and Canadian druggists rejoice in a recent opinion voiced by high Canadian authority that they were privileged to use the right of contract; that manufacturers can protect their retail prices without violating the Combines Trading Act. Last year at the convention in Winnipeg, they showed great appreciation of the Survey which educated pharmacists on the basic principles relative to nationally advertised articles and now, knowing they may use the right of contract, they feel there is a solution to many of their commercial problems, and are grateful for the coöperation and encouragement received from their fellow-pharmacists in the United States.

The AMERICAN PHARMACEUTICAL ASSOCIATION'S plan of meeting in sections was new to both Canadian and British representatives—they are accustomed to one big audience, but recognized the wisdom of having a number of sections in action at the same time, thus allowing audiences interested in diversified subjects to gather in special groups rather than generalize. Even small groups can accomplish a great deal for a cause when properly motivated.

The section on Education and Legislation was enthusiastic over the four-year course planned for the better education of future pharmacists. Papers read in various meetings evidenced closer coöperation of pharmacy with related professions, showed how it is winning the coöperation of physicians and dentists through hospital work, and college association, and how it is gaining its proper place of importance in the medical world.

Representatives from nearly all states participated in the transactions of the Boards of Pharmacy, the Conference of Law Enforcement Officials, and the Con-

ference of Pharmaceutical Secretaries. The sessions showed action and intensive discussions on important up-to-the-minute problems and the opinions expressed were frank, critical and constructive; every delegate had his opportunity to bring his plans forward for the benefit of co-workers. Opportunity continually "knocked at the door of every delegate" and many doors of learning were opened and many were there to learn.

The pace and scope of pharmacy represented in all of its branches is too great for any one person to cover; the convention at Toronto proved this and also that at the national meetings experts on every subject may be found who are willing and capable to help others solve special problems and to advance ideas of general conditions.

The bringing together of the three national associations was a master-stroke which broadens kindliness and good-will and will aid in solving many problems of the profession. Each country has solved some problems with which the other is still contending; the representatives found comfort in mutual discomfitures and all went away strongly resolved to uphold the profession of pharmacy as a service to humanity.—W. BRUCE PHILIP.

THE LAW ENFORCEMENT CONFERENCE DEALS WITH FUNDAMENTAL PHARMACEUTICAL PROBLEMS.

THE fourth annual meeting of the Conference of Pharmaceutical Law Enforcement Officials was held in Toronto in connection with the eightieth convention of the AMERICAN PHARMACEUTICAL ASSOCIATION. The program was devoted to a serious study of many problems met with in the enforcement of pharmacy laws. Conditions existing in England and Canada were discussed by experts in the laws of those countries. Law enforcement, as it is being developed in the states of the union, was discussed, and special study was given to recent court decisions in which pharmacy has a direct interest. Narcotic drug control was considered from national, state and international points of view. In other words, the Conference was devoted to an earnest study of all phases of pharmaceutical law enforcement.

The Conference is, in a very large degree, a clearing house for pharmaceutical legal opinion, an effort to correlate legislative viewpoints, and a means of consolidating the soundest views into one workable policy. It is designed to work out a more adequate conception of the basic aspects of pharmaceutical practice, and to stimulate a higher appreciation of personal responsibility on the part of pharmacists. The Conference is committed to the realization of that ideal expressive of professional competency and community worth.

The Conference owes its origin to the AMERICAN PHARMACEUTICAL ASSOCIATION, and was designed to meet a well-recognized need in our complex professional and business life. In keeping with the sanely progressive spirit which has characterized and distinguished the AMERICAN PHARMACEUTICAL ASSOCIATION throughout the eighty years of its existence, there grew up in it the conception that the stability of the profession and the best interests of the public demanded a more adequate observance of the laws under which the public seeks to be provided with a responsible and efficient personal professional service. This view was held by many thoughtful observers who sought to stimulate pharmacists to a realization of

the relationship between pharmacy and public welfare, with the view of encouraging a sense of personal pride and personal responsibility in all phases of pharmaceutical work. It was felt that a more generally accepted legal responsibility on the part of pharmacy would engender a more responsive personal responsibility. From this sense of personal responsibility, it was confidently believed, would come a professional service thoroughly alive to the significance of drugs and medicines to community welfare. In other words, it was felt that law observance, based upon a real appreciation of intrinsic values, and brought about through an acceptance of personal responsibility, would effectuate the purpose of the pharmacy laws, and stimulate the consciousness and morale of pharmacy from which would follow material and professional gains.

The Conference has been accorded enthusiastic approval, and its efforts have been followed with the keenest interest. Recognizing fully that the realization of its purpose is of the greatest significance to the future of the profession, it will continue its work, mindful at all times of its responsibility and alive to its opportunities for service of the greatest worth.—R. L. SWAIN.

THE PHARMACOPŒIA.

A REVISED British Pharmacopœia has just appeared[1] and represents the combined studies of the medical and pharmaceutical professions of Great Britain and its associated Dominions. For the first time in British Pharmacopœial Revision there has been this joint representation on the Commission and it would seem to be definitely to the betterment of the British Pharmacopœia.

It is gratifying to see the striking agreements between the nomenclature, standards, assay methods and general style of the United States Pharmacopœia and the British Pharmacopœia and in fact this has been an objective of the two Pharmacopœial Committees and has been helped by an interchange of revision circulars and through private correspondence.

One of the announced policies of the new British Pharmacopœial Committee is the publication of the British Pharmacopœia hereafter at ten-year intervals and the hope has been expressed that, if possible, it shall appear within five years of the publication of the United States Pharmacopœia.

In this way the English speaking medical and pharmaceutical professions will be offered, through the two books, the advantage of five-year revision periods and each Committee will supplement the other.

This demonstration offers a practical illustration of the value of international coöperation in the pharmacopœial field and of the benefits which all countries would derive from the establishment of a Pharmacopœial Secretaryship as an activity of the Health Committee of the League of Nations.

Even without an organized staff working for pharmacopœial interests the League of Nations Health Committee has been of assistance to the Pharmacopœial Commissions of all nations, now revising their standards, since the League has proposed International standards for digitalis, pituitary and the vitamins A, B and D, and now have the standards for a number of other biological products under consideration.

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[1] The British Pharmacopœia, 1932—available September 30, 1932.

When the last Brussels Conference met in 1925 it was recommended that the activities of the Conference be transferred to a Pharmacopœial Secretaryship at Geneva and also that the plan be officially approved by the governments of the nations participating.[1]

The United States Public Health Service and the United States Pharmacopœial Committee were both officially represented at the Brussels Conference in 1925 and also at the first Conference in 1902, but if the Conference activities are transferred to the League of Nations Organization the United States will be compelled to take part only in an unofficial capacity.

Because of our position in relation to the League it is not possible, therefore, for the U. S. Government to endorse the Pharmacopœial Secretaryship plan, and it has been learned that not a sufficient number of other nations have, as yet, endorsed the proposal to justify its serious consideration at Geneva.

Furthermore, the financing of the activities of the office must be provided for before an organization can be established and made to function.

If the thirty-four nations represented at the last Brussels Conference would endorse the project officially and each agree to contribute annually such an amount as would be agreed upon, probably in the proportion already established for maintaining the International Postal Union, it would be a relatively simple matter to finance the office and, if it rendered no greater service at the start than to compile annually the pharmacopœial literature of the world, for the use of all nations, it would justify its cost and perhaps save each country as much as it had individually contributed.

The U. S. Pharmacopœial Convention has always been an ardent supporter of the projects of the Brussels Conference and, even though it could only participate unofficially it would likely contribute its share of the cost of the proposed new office.

It is not too soon to give consideration to plans for another International Pharmacopœial Conference. If this were now proposed for 1935 at Geneva it might give the necessary stimulation to all who are interested in international cooperation so that they would obtain the support of their Governments and thus complete the plan for a League Secretaryship to be inaugurated at such an International meeting. This is a suggestion and an invitation for world action.—E. F. Cook.[2]

[1] The "Brussels Conference" was known officially as the "Second International Conference on the Unification of Formulæ of Heroic Remedies," and was held in Brussels, Belgium, September 21–29, 1925. The following nations were represented by delegates: Argentine, Australia, Austria, Belgium, Bulgaria, Colombia, Cuba, Denmark, Egypt, Finland, France, Germany, Great Britain, Greece, Holland, Hungary, Ireland, Italy, Japan, Lettonia, Luxemburg, Norway, Peru, Poland, Roumania, Serbia, Croatia, Slavonia, Spain, Sweden, Switzerland, Turkey, Union of South Africa, United States of America and the League of Nations.

[2] Chairman of the Committee of Revision, U. S. Pharmacopœia, Eleventh Revision.

OFFICERS OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

The following officers were elected by the National Association of Boards of Pharmacy for the ensuing year: *President*, Clare F. Allan, Michigan; *Vice-Presidents*, C. Thurston Gilbert, Connecticut; Robert P. Fischelis, New Jersey; G. V. Kradwell, Wisconsin; J. W. Slocum, Iowa; W. L. Lyle, Virginia; Booker T. Latimer, Arkansas; C. H. Evans, Georgia; Joseph P. Murray, Colorado; Arthur Lee Phelps, Arizona. *Retiring President*, A. L. I. Winne, was elected member of the Executive Committee and W. E. Bingham was chosen for the newly created office of *Honorary President*.

REMINGTON HONOR MEDAL AWARD FOR 1932.

BY THE COMMITTEE.

The Remington Honor Medal for outstanding service to Pharmacy has this year been awarded to Eugene G. Eberle, editor of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and a past-president of the Organization. The presentation will be made in Baltimore, on October 12th, at a testimonial dinner given in his honor by the New York and Baltimore Branches of the AMERICAN PHARMACEUTICAL ASSOCIATION. Among the speakers will be Professor E. Fullerton Cook, chairman of the Revision Committee of the United States Pharmacopœia XI, Dr. Henry V. Arny, dean of the School of Pharmacy, Columbia University, and Dr. E. F. Kelly, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION. The medal will be presented by the Senior Past-President of the New York Branch.

Editor Eberle's pharmaceutical career has extended over a long period of years and his contributions to his chosen profession have distinguished him as one of its foremost exponents. He was born at Watertown, Wis., 1863; served an apprenticeship in the pharmacy of his father and brother, and was graduated at the Philadelphia College of Pharmacy in 1884. He then engaged in the practice of retail pharmacy in his native state, later removing to Dallas, Texas. While there he helped to organize the Texas Drug Company, wholesale and manufacturing pharmacists, having charge of its laboratory. For a while he edited the *Texas Druggist* and in 1908 founded the *Southern Pharmaceutical Journal*. An active member of the Texas Pharmaceutical Association, he served as president (1901–1902) and secretary (1910–1914).

In 1900 the School of Medicine and Pharmacy (now a part of Baylor University) was founded in Dallas and Editor Eberle was made dean and professor of pharmacy, serving in these capacities until 1915 when he assumed his present position as editor of the JOURNAL. Professor Eberle served as a member of the Committee of Revision of the United States Pharmacopœia 1910–1920, as a member of the Auxiliary Committee on the National Formulary III, and as president of the AMERICAN PHARMACEUTICAL ASSOCIATION 1910–1911. He is a member of the American Chemical Society, American Association for the Advancement of Science, Kappa Psi and Rho Chi fraternities, is a past officer of all the Dallas York Rite bodies of Masonry, a past-potentate of the Shrine (Hella Temple) and a 33rd degree Scottish Rite Mason.

Historical Pharmacy has been a subject of particular interest to Professor Eberle and he has collected a great deal of interesting and valuable data pertaining thereto. His personal library on this phase of pharmacy is regarded as one of the finest private collections extant to-day. He holds membership in a number of historical societies both here and abroad.

Professor Eberle through his diligent and untiring labors has rendered services of inestimable value in promoting the development of scientific pharmacy in all its phases. His loyal and self-sacrificing labor for the ASSOCIATION has won the respect and appreciation of a wide circle of friends. As Dr. E. H. Cary, his former associate at Baylor University and now president of the American Medical Association, has so aptly and accurately described him, he is "a lovable character, an excellent student. . . a man worthy of respect and friendship."

SCIENTIFIC SECTION

BOARD OF REVIEW ON PAPERS.—*Chairman*, L. W. Rowe; John C. Krantz Jr.; F. C. Bacon.

THE EXTRACTION AND ASSAY OF CRUDE ERGOT.[1]

(From the Department of Biochemistry, School of Hygiene and Public Health, the Johns Hopkins University, Baltimore.)

BY MARVIN R. THOMPSON.[2]

A report of studies embracing the efficiency of various methods of extraction of crude ergot and the evaluation of the alkaloidal activity by biological and chemical methods, including potentiometric studies. The isolation of a new active substance from Ergot, with pharmacologic and chemical studies thereof, likewise constitutes a part of this report.

The United States Pharmacopœia, 10th Revision, requires Ergot to be converted into a fluidextract, by the official process for preparing Fluidextract of Ergot, before assay. This official process, aside from the menstrua employed, is one of the general processes prescribed for Fluidextracts in the U. S. P., designated as Type Process "B." (See U. S. P. X, for details of process.)

The importance of efficiency in extraction by this process cannot be overestimated for two major reasons:

1. Because if this process does not result in the appearance of the total amount of therapeutically active principles that was present in the parent drug, no method of assay, regardless of how accurate it may be, could yield reliable results in evaluating the crude drug.

2. Because of the economic factor in the manufacture of standardized Fluidextract of Ergot. Incomplete extraction would necessarily result in a lower yield of finished product of standard potency.

In an earlier series of reports, the author (1) confirmed the work of several European workers in showing that the U. S. P. X process for preparing a Fluidextract of Ergot was far more efficient than some of the more important pharmacopœial processes, and second to none in extracting the alkaloids which are at present generally regarded as therapeutically valuable constituents of the drug. This, however, does not necessarily indicate that the present extraction process is perfectly satisfactory.

Wokes and Elphick (2) found that, working with 20-Gm. samples, the U. S. P. menstruum No. 1 for Fluidextract of Ergot did not exhaust the drug until the percolation was carried to at least a 1 in 6 percolate. It has, of course, been known for many years that a 1 to 1 percolate would not contain the total alkaloids of the drug. Accordingly, the U. S. P. process requires that a reserve portion of

NOTE: The work herein described concerning the extraction of Ergot constitutes the basis for a recommendation to Prof. E. Fullerton Cook and Dr. Erwin E. Nelson, of the Committee of Revision, during a visit to my laboratory in November 1931, to change the method of preparation of Fluidextract of Ergot, U. S. P. X, from Type Process "B" to Type Process "C" for Fluidextracts of the U. S. P. X, for the proposed Interim Revision on Ergot and Fluidextract of Ergot.

[1] Part II of a Thesis submitted to the Faculty of Philosophy of the Johns Hopkins University in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

[2] Emerson Professor of Pharmacology, School of Pharmacy, University of Maryland.

850 cc. per 1000 Gm. of drug be obtained, then that percolation be continued until the drug is exhausted. No test for exhaustion is mentioned. The large volume of exhaust percolate is then directed to be concentrated, with the aid of heat, to a volume such that when incorporated in the reserve percolate, one cubic centimeter will be the equivalent of one Gm. of drug. The prescribed U. S. P. assay procedure assumes that this Fluidextract contains the total activity of the drug.

It is now well known that the prolonged heating necessary for concentration of the exhaust percolate, even *in vacuo*, is not conducive to the stability of Ergot alkaloids. The work of Wokes and Elphick (2), Smith and Stollman (3), and the writer (1), conclusively establishes this point.

This being the case, even if the assay method were satisfactory, it is highly probable that instead of obtaining an accurate estimate of the total alkaloidal potency of the drug sample itself, *one obtains an estimate of the activity of a Fluidextract prepared on a laboratory scale, yielded by the drug sample.* This Fluidextract would, because of the heat employed in concentrating the exhaust percolate, probably contain less alkaloidal potency than was present in the parent drug, and consequently a low assay result would be obtained.

Since a great portion of the total crude Ergot used in this country is used in preparing the official Fluidextract, this would not be a seriously objectionable situation, provided that the extraction efficiency experienced on a laboratory scale was the same as that found in the commercial manufacturing scale. As it happens, this is not the case.

All other factors, such as composition of menstruum, time of maceration and percolation rate, etc., being equal, the efficiency of any ordinary extraction procedure is dependent upon the fineness of the particles of the drug, and the height of the column of drug through which the menstruum passes. At the same time, it is probably true that the extraction equipment and procedure of no two manufacturers is of identical efficiency. But it is most certainly true that the results of an assay of crude Ergot (as the U. S. P. directs, using an assay sample of the usual size) are rarely confirmed by the results obtained in an assay of a finished Fluidextract prepared on a commercial scale.

The experimental evidence which follows bears upon the points raised above.

In order to secure reliable results in assaying strong and weak percolates, the method of assay employed will be described in detail, and reasons for rejecting other methods given.

Assay Methods Available.

1. The U. S. P. X Cockscomb Method and Modifications.

Owing to a number of factors, such as the rapid change in the susceptibility of so-called "standardized cockerels" from week to week, the presence of substances in ergot extracts which interfere with the quantitative response to the ergot alkaloids (a circulatory phenomenon), the very lack of uniform sensitivity of the cockscomb reaction to varied doses of ergot preparations, the hideously discrepant results obtained by different assayists upon identical samples, the fact that tests were desired on relatively low amounts of alkaloids in unusually great volumes

of percolate (which would necessitate impossible doses to each cockerel), this method was rejected as a possible assay procedure in this work.

Concerning the mechanism of this reaction, it is significant to note that any kind or intensity of the characteristic Ergot cyanosis (bluing) can be duplicated by simply exerting pressure, with the fingers, or a suitable weak clamp, around the base of the comb for ten to forty minutes. This indicates the reaction to be of vasomotor character, and that the quantitative response to Fluidextract of Ergot could consequently be expected to be just as erratic as that shown upon the carotid blood pressure of dogs or cats following subcutaneous, intramuscular or intravenous administration of this preparation.

2. THE COLORIMETRIC METHOD, AND MODIFICATIONS.

After many attempts, our inability to obtain satisfactory check results by this method as described by Smith (4) before this phase of the work was undertaken, caused the abandonment of this method for the purpose at hand. The discrepancies obtained were apparently due to lack of sufficient experience with the method, but since then, this method and its various steps and modifications have been studied in great detail. The results of these studies form a later part of this report.

3. THE ISOLATED RABBIT UTERUS METHOD.

An earlier series of articles by the writer (1) dealing with various phases of the Ergot problem was terminated by a series of recommendations, among which the so-called "Epinephrine-reversal" Rabbit Uterus Method, essentially that of Broom and Clark (5), was set forth as the most accurate and most reliable biological method then available for the estimation of the alkaloidal activity of Fluidextract of Ergot. No worker, before or since then, has published evidence which would cause this view to be altered. It is significant that those workers who have had reasonable experience with this method agree that it is more accurate and more reliable than the present official method.

In 1930, however, M. I. Smith (4) published his chemical method, and showed with an impressive amount of evidence that this method was as accurate and dependable as the Broom-Clark Rabbit Uterus Method, and decidedly less time-consuming. Studies on this method will be deferred to a later part of this report, since it was not successfully used on the phase of work at hand.

Since practically every worker of experience upon the Broom-Clark Method has agreed that this is the most accurate and reliable of all biological methods proposed, this view is now quite generally accepted. Nevertheless, there is a very considerable amount of opposition to the method, on the grounds that it is too difficult of technique, too tedious, too time-consuming, and, therefore, not practical as a routine method in laboratories having large numbers of these assays to perform.

It is important to briefly discuss specifically these objections to the method.

First of all, using the method essentially as originally described as has been customary by all workers to date, the very fact that the method involves the use of isolated segments of the rabbit uterus has in itself caused some apprehension.

Secondly, all writers have experienced considerable difficulty in selecting suitable uteri. Various views have been expressed on how best to choose the

rabbits, but no practical method has been found to insure the selection of anything but a fair proportion of satisfactory uteri. Pregnancy, age of rabbit, and stage of oestrous are the interfering factors.

Thirdly, and perhaps the greatest objection of all, the time required to run an assay compared to that required in the official Cockscomb test, has been far too great. It appears to be a quite general view that an operator must be exceedingly fortunate to obtain a satsifactory assay on more than one sample during a whole day.

The writer has devoted a great deal of time during the past two years in a continuation of previously reported work on Ergot. In the course of this work, the Rabbit Uterus Method has been depended upon almost exclusively for estimations of alkaloidal activity, and a technique has been developed which, at least partially, eliminates hitherto existing objections to this method.

First of all, this technique provides for accuracy and dependability in estimating the alkaloidal activity that cannot be duplicated by any other known biological method in our hands.

Secondly, this technique provides for an assay upon a sample of Fluidextract of Ergot, that is sufficiently accurate for all practical purposes, in a period of time not exceeding two hours.

Thirdly, the necessity for blaming poor results upon unsatisfactory uteri has been practically eliminated.

Lastly, the technique does not require expensive equipment or an unreasonable amount of experience, as has been proven to the writer's satisfaction by the fact that students have demonstrated their ability to secure dependable results after using the technique only a relatively short period of time.

In support of these claims, it is necessary to describe this technique in detail.

(To be continued)

DIGITALIS FAT—THE PETROLEUM-ETHER EXTRACTIVE OF DIGITALIS PURPUREA LINNÉ.*

BY A. JOHN SCHWARZ.

INTRODUCTION.

Reports on the pharmacological action of Digitalis and various preparations of the leaf make mention of the presence of a "fixed oil" or "fat" in the leaf which may or may not render the preparation (particularly the tincture)

a. Less sightly
b. Less stable
c. Less palatable
d. Less tolerable.

The last three conditions apply also to the leaf.

It is strange that no detailed chemical analysis of the digitalis fat has been recorded since the above-mentioned characteristics have been ascribed to it. Such

* An excerpt from the thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy, University of Wisconsin, Sept. 1931, and presented before the Scientific Section of the A. PH. A., Toronto, Aug. 1932.

a study is deemed necessary in order to determine whether the fat does or does not possess the properties attributed to it by the various investigators. It is the purpose of this investigation to determine as many as possible of the individual constituents of digitalis fat.

HISTORICAL.

The fat-free tincture of Digitalis was introduced in 1894 by J. W. England[1] who believed the nausea in digitalis administration to be caused by the presence of the fixed oil and its free acids. W. C. Alpers (1915)[2] made the statement that the fatty oil of digitalis leaves causes nausea. This reported property of digitalis fat has been disproven by the work of R. Hatcher and C. Eggleston (1913).[3] They isolated the fat from the leaf by means of petroleum-ether extraction. Large doses of it were fed to cats—the amount contained in 70,000 therapeutic doses—with no emetic or nauseous indications. The digitalis bodies produce the nausea by acting directly upon the vomiting center in the medulla. H. A. Christian (1919)[4] belittled the fat-free preparations of digitalis, describing the procedure as a fad. In his opinion, results would be more satisfactory if the effort were spent in obtaining good leaves. M. Dooley (1919)[5] found that the fat-free tinctures produce nausea as well as those which are not defatted.

The instability of digitalis preparations has also been charged against the fat of digitalis leaves. M. Mansier (1901)[6] believed that the changes in the tincture of digitalis were due to oxidase action at the expense of changes in tannin and in small quantities of the fatty and volatile bodies in the tincture. By the removal of the fat it was thought that the enzyme activity on the active constituents would be checked, thereby preserving the strength of the tincture and preventing a precipitation. G. Roth (1916)[7] found that the fat-free tinctures of digitalis deteriorated as rapidly, and in some cases more rapidly, than those which had not been defatted. P. Pittenger and H. K. Mulford, Jr. (1918)[8] also reported deterioration of the fat-free tinctures but the deterioration did not seem to be so rapid as in those which had not been defatted.

The matter of "greater degree of pharmaceutical elegance as a result of the removal of the fat"[9] has been another one of the reasons advanced for the removal of the fat, since this checks, if not entirely prevents, the formation of a precipitate after a short period of standing.[10]

With so much concern about the evil effects of the fat of digitalis leaves, there are only four references to the oil or fat of digitalis leaves, and in none of these reported instances has there been an attempt at an analysis of the fat. Three references have been found to the fat of the seed, in two of which there has been no attempt at analysis, and in the third, only a meagre analysis.

The first oil of digitalis was reported by J. D. Morries (1834).[11] This was an empyreumatic oil obtained by the dry distillation of the leaf. The physical properties were described.

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[1] *Amer. Jour. Pharm.*, 71 (1899), 333. [2] JOUR. A. PH. A., 4 (1915), 715.
[3] *Jour. Amer. Med. Assoc.*, 60 (1913), 499. [4] *Amer. Jour. Med. Sci.*, 157 (1919), 593.
[5] *Midland Drug.*, 53 (1919), 5. [6] *Brit. & Col. Drug.*, 40 (1901), 175.
[7] *Bull. Hyg. Lab.*, No. 102 (1916), 30. [8] JOUR. A. PH. A., 7 (1918), 236, 435, 1031.
[9] *Drug. Circ.*, 61 (1917), 25. [10] *Pharm. Centralh.*, 43 (1902), 425, 660.
[11] *Amer. Jour. Pharm.*, 5 (1834), 262.

The second report on oil of digitalis was made by J. England in 1887.[1] The oil was obtained by petroleum-ether extraction of the leaves. He expressed surprise at finding 5 per cent of fixed oil which he described as a dark red-brown transparent liquid of heavy narcotic odor consisting of 5.4 per cent of volatile substance which is lost upon heating the oil at 100° C. for eight hours. Here again there is no analysis of the oil or fat.

In 1917, G. Éwe[2] reported the physical constants of an oil obtained from digitalis leaves by petroleum-ether extraction, but no mention is made of the chemical composition of the oil. He described the extractive as an orange-yellow liquid. The percentage of oil in the leaves was reported as a "maximum of 12 per cent, although the average amount is much less."

B. K. Whyte (1919)[3] found 4.43 and 4.014 per cent of oil in digitalis leaves which she described as a thick green fluid still having the odor of petroleum ether.

Concerning the oil of digitalis seed, A. Buchner, Sr. (1851)[4] obtained an oil by ether extraction which has merely been referred to as a siccative oil, constituting 40 per cent of the weight of the seed.

I. S. Melanoff (1927)[5] reported an amber-colored, oily liquid with a fatty odor and bland taste which he obtained from digitalis seeds. He determined a number of constants for it and classified it as a semi-drying oil.

The only attempt at a chemical analysis of the fat of either the leaf or seed of digitalis was made by S. Culter (1930)[6] when he reported the seed to contain 31.4 per cent of oil from which he isolated glycerol, linolenic and linolic acids.

EXPERIMENTAL.

The Petroleum-Ether Extract.—Digitalis, grown and harvested at the Wisconsin Pharmaceutical Garden, was reduced to a coarse powder in a Hance disintegrating mill and sifted. The ground drug was moistened with petroleum-ether (b. p. 30° to 80° C.) and then packed in a Lloyd's extractor for continuous percolation. Each charge of 9 Kg. in the extractor was subjected to the action of the petroleum-ether for six days, after which time the percolate no longer contained fatty extractive as shown by the evaporation of 10 cc. from a watch glass.

The greater amount of the petroleum ether was recovered from the percolate by distillation on a steam-bath under reduced pressure. The extract was then placed in evaporating dishes and exposed to the air in a warm room, stirred mechanically, and placed in an electric fan air current so as to remove the final traces of petroleum ether. This was carried out in two separate fractions with the following results:

	Fraction I.	Fraction II.
Weight of leaves	13.07 Kg.	30.11 Kg.
Weight of petroleum-ether extract	0.167 Kg.	0.308 Kg.
Per cent of extractive	1.277	1.023

It was a surprise to find that the petroleum-ether extractive was so low, especially after Éwe had reported a maximum of 12%, England 5% and Whyte 4 plus %. In order to verify the above results three 10-Gm. samples were ex-

[1] *Amer. Jour. Pharm.*, 64 (1892), 364. [2] "Proc. Penna. Pharm. Assoc.," 41 (1918), 162.
[3] *Unpublished data*, School of Pharmacy, U. of Wis. [4] "Buchner's Report," 9 (1851), 38.
[5] *Amer. Jour. Pharm.*, 99 (1927), 549. [6] *Ibid.*, 102 (1930), 545.

tracted in Soxhlet extractors, the extraction continuing for fourteen days. The results of these extractions were:

	Sample I.	Sample II.	Sample III.
Weight of leaves.....	10.000 Gm.	10.000 Gm.	10.000 Gm.
Weight of extractive...	0.1124 Gm.	0.1189 Gm.	0.1236 Gm.
Per cent of extractive..	1.124 per cent	1.189 per cent	1.236 per cent

This gives an average of 1.22 per cent of petroleum-ether extractive which compares favorably with the percentages of extractive obtained for the larger fractions in the Lloyd extractor.

On account of the low per cent of extractive in the digitalis leaves, and on account of the difficulties involved in carrying on research with small quantities of material, the coöperation of Eli Lilly & Co. (Indianapolis)was obtained who consented to recover the fat from their gasoline extractions of digitalis leaves used in the preparation of the fat-free tincture. The leaves were of German importation; they were reduced to a coarse powder in a Meade mill, and extracted with a special high grade gasoline (b. p. 60° to 80° C.), a product of the standard Oil Co. of Indiana.

The fat furnished by Eli Lilly & Co. was obtained from the processing of three lots of leaves. The data is as follows:

	Lot No. I.	Lot No. II.	Lot No. III.
Weight of leaves.....	107.000 Kg.	107.000 Kg.	107.000 Kg.
Weight of extractive...	1.123 Kg.	1.875 Kg.	1.419 Kg.
Per cent of extractive..	1.05 per cent	1.75 per cent	1.32 per cent

These three fractions were combined with an average of 1.373 per cent of petroleum-ether extractive. These results compare favorably with those obtained on the Wisconsin grown digitalis but very unfavorably with those previously reported by England, Ewe and Whyte.

The combined extracts had a consistency of cold molasses; not completely solid, yet liquid enough so that it could be poured, the mobility being very sluggish. The color, in mass, is black but upon dispersions shows a decided deep green, chlorophyllaceous color. The odor is pronounced, heavy and faintly characteristic. The extractive or fat is greasy to the feel.

Saponification of the Fat.—1000 Gm. of the petroleum-ether extractive or digitalis fat was saponified with alcoholic potassium hydroxide in 100-Gm. lots according to A. Boemer's method.[1] After saponification and the addition of water, the liquid is allowed to cool to 20° C. and then extracted repeatedly with ether until the ethereal extractions are no longer colored. The ethereal extracts are thoroughly washed with distilled water several times, dried over anhydrous sodium sulphate after which the ether is recovered.

Combining all the fractions, a total of 344 Gm. of non-saponifiable material was obtained or approximately 35%. This has a reddish, chocolate color and possesses a faint odor. The consistency is a little harder than that of cold butter; it is smooth and waxy to the feel, and gives a bright orange-yellow stain to any object with which it comes in contact.

As to the saponifiable material, the combined material of the 10 fractions yielded 731 Gm., part of which weight is due to water held by emulsification.

[1] *Ztschr. f. Untersuch. d. Nahres. u. Genussm.*, 1 (1898), 21.

THE SAPONIFIED FRACTION.—The potassium soap solution which had been extracted with the ether to remove the non-saponifiable matter, was warmed and a stream of carbon dioxide gas bubbled through it until the last traces of alcohol were removed. To each 400 cc. of the resulting solution, 1600 cc. of hot water were added and the solution treated with a slight excess of 1:3 sulphuric acid solution. The mixture was kept hot and under an atmosphere of carbon dioxide until the free fatty acids separated as a distinct green layer. This was then transferred to a warm separatory funnel and washed with several portions of boiling water until the washings were free of acid. The fatty acids showed a strong tendency to emulsify. This was partly overcome by keeping the separatory funnel hot. The various portions, amounting to 731 Gm. were combined and kept in a tightly closed container under carbon dioxide until they were used.

Glycerol.—The aqueous portion obtained in the separation of the free fatty acids was neutralized with hydrochloric acid, and then evaporated at room temperature. After considerable concentration, the potassium sulphate crystallized and was removed from time to time. Finally there remained a syrupy, sticky mass which was extracted with a mixture of alcohol and ether (3:1). This was dried over calcium chloride, filtered and then evaporated at room temperature. When all of the alcohol and ether had been evaporated, there remained a reddish colored syrupy liquid that had a sweet taste. When some of it was heated with potassium bisulphate, it gave a positive acrolein test, indicating glycerol.

The Fatty Acids.—For the purpose of separating the insoluble fatty acids, the 731 Gm. of the green fatty acid material were treated in two portions by a lead-alcohol method, based on those of E. Twitchell,[1] A. Gruen[2] and R. J. Pauly.[3]

The procedure consisted in adding a hot alcoholic solution of lead acetate slowly and with continuous, rapid stirring to the nearly boiling alcoholic solution of the green fatty acid material. This was allowed to cool and then placed in an ice box and kept at a temperature of 15° C. for three days. It was then filtered, the filtrate tested for excess lead with alcoholic sulphuric acid and the residue then washed with cool alcohol.

The filtrate and washings were combined, amounting to 10 liters which were of a dark green color by transmitted light and black by reflected light. The residue (300 Gm.) was a powder of medium light green color, with fragments of a very dark greenish color.

This was purified by boiling with 8 L. of alcohol to which 50 cc. of glacial acetic acid had been added to facilitate solution of the lead salts of the fatty acids. The lead salts that dissolved were filtered from those that remained insoluble, and the filtrate was cooled, placed in the ice box at 15° C. for three days and then filtered and repeatedly washed with cold alcohol. As a result of this treatment of the lead salts of the fatty acids, the following four fractions were obtained:

I. Lead salts insoluble in boiling alcohol (148 Gm.).

II. Lead salts soluble in hot alcohol, but insoluble in cold alcohol (97 Gm.).

III. Solution of lead salts soluble in cold alcohol, obtained by repeated washing and purification of Fraction II (8 liters). IV. Solution of lead salts soluble in cold alcohol (10 liters).

[1] *Ind. & Eng. Chem.*, 13 (1921), 806.

[2] A. Gruen, *Analyse der Fette u. Wachse*, 1 (1925), 221. [3] Ph.D. Thesis, U. of Wis. (1931).

(*To be continued*)

THE ANTISEPTIC VALUE OF PHENOL OINTMENTS.*,**

BY WILLIAM J. HUSA*** AND JEANNETTE M. RADIN.****,*****

INTRODUCTION.

For many years phenol has been considered a standard for the evaluation of antiseptics. Furthermore, various pharmaceutical preparations of phenol have been extensively used in medical practice. One of the standard preparations of phenol is Ointment of Phenol, U. S. P. X. It has generally been supposed that this ointment had an antiseptic action, but Reddish (1) has shown by laboratory tests that it has no antiseptic value.

It is known that the effect of ointments frequently is dependent to a large extent on the nature of the base. Hence, it was thought that by variations in the base it might be possible to produce a phenol ointment having definite antiseptic properties. The purpose of the present investigation was to make such a study of the effect of variations in the base on the antiseptic properties of phenol ointments.

HISTORICAL REVIEW.

As far back as 1881 Robert Koch (2) made the statement that phenol when dissolved in oil or alcohol does not exhibit any antiseptic properties. This statement was based on the following experiments: Sterile test-tubes were filled with various phenol solutions. Silk fibres impregnated with spores of *Bacillus anthracis* were immersed in the solutions and the test-tubes tightly stoppered. After definite periods the fibres were taken out with the aid of a platinum loop and transferred into gelatin, blood serum or bouillon broth, and the growth and development of the organism observed. Aqueous solutions of phenol of 1% and 2% strength were ineffective, as growth was observed even after immersion for 15 days and 7 days, respectively. Growth was completely inhibited by 3% phenol in 7 days, by 4% in 3 days and by 5% in 2 days. In similar tests using the bacilli themselves instead of spores no growth was observed even after immersion in 1% aqueous phenol solution for only 2 minutes, while the controls showed abundant colonies. Koch next tried 5% solutions of phenol in oil and in alcohol. The inefficiency of such oily or alcoholic solutions was shown by the fact that the spores were not killed in 110 days, and with the bacilli the growth was completely inhibited only after 6 days.

G. Wolfhügel and G. von Knorre (3) explained the behavior of phenol in oil on the basis of the difference in diffusibility of oily and aqueous solutions. A 5% solution of phenol in oil was brought into direct contact with water, and the amount of phenol which diffused into the water was determined by the Landolt and Koppen-

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* Presented before the Scientific Section, A. PH. A., Toronto, Canada, 1932.

** This paper is based on a thesis presented to the Graduate Council of the University of Florida by Jeannette M. Radin, in partial fulfilment of the requirements for the degree of Master of Science in Pharmacy.

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**** Holder of a University of Florida Graduate Scholarship, 1931–1932.

***** The authors wish to express their indebtedness to the Department of Botany and Bacteriology of the University of Florida for the use of laboratory facilities for carrying on the bacteriological portion of the work, and to Prof. W. R. Carroll, under whose supervision the bacteriological tests were conducted.

schaar method (phenol is changed into tribromphenol and the excess of bromine is titrated). The amount of phenol which diffused into the water from the oil was negligible compared with that which went over from an aqueous solution into oil.

Gottstein (4), in 1889, experimented with 5% of phenol in a lanolin base. Small amounts of the ointment were inoculated with *Bacillus prodigiosus* (*Serratia marcescens*) and *Bacillus fluorescens liquifaciens* and a drop of the mixture transferred into nutrient gelatin, and the development of the organism observed. Growth was not inhibited. Gottstein made the general statement that oil-soluble antiseptics when incorporated in an ointment base do not possess any antiseptic properties, but that water-soluble antiseptics do not lose their antiseptic properties when incorporated in oily bases.

In 1895, E. Breslauer (5) carried out a series of experiments with the object of determining to what extent antiseptic substances, when incorporated in ointments, exert their germicidal action and whether the antiseptic action can be influenced by varying the bases. Cultures of the test organisms were grown on agar for two days at 22° C. The colonies were then transferred into 2 cc. of bouillon, vigorously shaken and filtered through glass wool. A number of glass platelets were then introduced into the bouillon suspension, removed after a short time and dried on a Petri dish. The dried platelets were next introduced into the ointment to be tested, and after a definite period of time they were taken out, washed with ether to remove the ointment, transferred into sterile bouillon tubes, and observed for growth of the organism. Ointments containing 5% of phenol in various bases were tested against *Bacillus prodigiosus* (*Serratia marcescens*) and the time after which growth was inhibited was as follows: oil, 3 days; vaseline, 90 minutes; fat, 45 minutes; lanolin (anhydrous), 20 minutes; lanolin, 5 minutes; cold cream, 5 minutes. The same ointments were tested against *Staphylococcus aureus* and the time after which growth was inhibited was: oil, growth continued: vaseline, 1 day; fat, 4 hours; lanolin (anhydrous), 2 hours; lanolin, 45 minutes; cold cream, 20 minutes. Breslauer concluded that lanolin and cold cream are the best bases for antiseptics.

During the World War, Cheyne (6) experimented with various antiseptics and antiseptic ointments with the hope of finding one that would prevent sepsis in wounds. As a result of his work the British adopted the plan of forwarding two packages to each man in the navy, one a paste of 20% phenol in a lanolin base (Cheyne recommended a base of 6 parts of lanolin and 1 part of white wax) and the other a powder of equal parts of boric and salicyclic acids. Keilty and Packer (7) adopted Cheyne's technique in testing antiseptics. Ointments spread on cover slips were placed in Petri dishes under agar slabs, the ointment being next to the agar. The upper surface of the slab was inoculated by gently stroking with two loopfuls of a bouillon suspension of bacteria, such as *Staphylococcus aureus*, *Streptococcus pyogenes* or *Bacillus coli*. After incubation for 24 hours, the plates were examined for growth and such points were observed as extent of growth, whether or not growth was directly over the ointment, how close the growth was to the margin of the ointment and the size and numbers of the colonies in relation to their distance from the ointment. In classifying antiseptics, Keilty and Packer rated 10 to 20% phenol as markedly active.

Another method involving the spreading of the ointment on an inoculated

agar medium is that devised by Reddish (8) for the Food, Drug and Insectide Administration, U. S. Dept. of Agriculture. In this test the culture of *Staphylococcus aureus* is thoroughly mixed with the melted nutrient agar, which is then poured into a sterile Petri dish and allowed to cool at room temperature. As soon as this inoculated agar has hardened, the ointment is spread over a small portion of the surface with a sterile glass rod and the plates are incubated for 24 or 48 hours. If an ointment has an antiseptic action there is a clear zone around the streak. Ointment of Phenol, U. S. P. X, did not show antiseptic properties by this test.

EXPERIMENTAL PART.

Method Used.—The Reddish method (8) was used, with some slight modifications. *Staphylococcus aureus* was grown at 37° C. in broth containing 0.5% Bacto beef extract, 0.1% Bacto peptone and 0.5% sodium chloride, the p_H being adjusted to 6.8. The culture was transferred into this medium for three consecutive days. The third transfer was used after 24 hours' incubation. One-tenth cc. of this culture was thoroughly mixed with 10 cc. of melted nutrient agar (composed of 3 Gm. Bacto beef extract, 5 Gm. Bacto peptone, 15 Gm. agar and 1000 cc. distilled water, and the p_H adjusted to 6.8) at 45° C., the mixture poured into a sterile Petri dish and allowed to solidify at room temperature. The ointment, warmed to 37° C., was spread over a small portion of the surface of the inoculated agar with a sterile glass rod, the plate inverted and incubated at 37° C. for 48 hours. A separate Petri dish was used for each individual test.

Antiseptic Value of Some U. S. P. and N. F. Ointments.—A number of U. S. P. X and N. F. V ointments were tested in duplicate to determine how the results would compare with those reported by Reddish (1) for the same ointments.

TABLE I. ANTISEPTIC ACTION OF SOME U. S. P. AND N. F. OINTMENTS.

Ointment.	Width of Zone in Mm. Test A.	Test B.	Reported by Reddish.
Ointment of Phenol	No zone	No zone	No zone
Ointment of Yellow Mercuric Oxide	6	6	4
Iodoform Ointment	No zone	No zone	No zone
Iodine Ointment	6	6	8
Chrysarobin Ointment	No zone	No zone	No zone
Ointment of Mild Mercurous Chloride	4	4	1.5
Ointment of Boric Acid	No zone	No zone	No zone
Sulphur Ointment	No zone	No zone	No zone
Calamine Ointment	3	3	2
Tar Ointment	3	3	3
Ointment of Zinc Oxide	No zone	No zone	No zone
Ointment of Ammoniated Mercury	8	8	5

Table I indicates that our results agreed closely with those reported by Reddish.

Variations in Method of Smearing.—The ointments listed in Table I were also tested by placing the ointment on the bottom of the dish and pouring the melted agar over it. The results were the same as by the other method except in the case of Ointment of Ammoniated Mercury, which when smeared on the bottom of the dish gave a zone that extended to the edge of the dish. Although Reddish smeared the ointments both above and below the agar, he did not report any difference in

the zones obtained by the two methods. In the present investigation it was felt that the method of smearing on the surface of the agar was more trustworthy and in all further experiments this method was the only one used.

It was thought that the amount of ointment used in the test might influence the width of the zone. Tests were carried out on this point by using varying amounts of ointment smeared on a definite area in the center of the dish.

TABLE II.—EFFECT OF VARYING THE AMOUNT OF OINTMENT USED.

Ointment of Yellow Mercuric Oxide.		Ointment of Ammoniated Mercury.		
			Width of zone in mm.	
Amount of ointment in Gm.	Width of zone in Mm. when smeared on 2 cm. square.	Amount of ointment in Gm.	On 2 cm. square.	On 3 cm. square.
0.25	6	0.25	7	7
0.50	7	0.45	8	8
0.75	8	0.65	8	8
1.00	8	0.75	9	9
1.15	9	0.95	9	9
		1.15	9	9

As indicated in Table II, the zone increased slightly in width with increasing amounts of ointment. From these results it was concluded that it would be best to smear a definite amount of ointment over a definite area. For the present work a weight of 0.5 Gm. on an area 2 cm. square was adopted. The area was marked on the under side of each dish with a colored wax pencil.

Varying Percentages of Phenol in Petrolatum.—Since Ointment of Phenol, U. S. P. X, containing 2% of phenol, showed no antiseptic properties, tests were carried out to determine what percentage of phenol was necessary to show antiseptic properties when incorporated in petrolatum. As indicated in Table VIII, when the proportion of phenol was 5% or less there was no zone. Ten per cent of phenol gave a 4-mm. zone and for higher percentages the width of the zone increased with increasing percentages of phenol.

Effect of Water in Phenol Ointments.—Breslauer (5) reported that the addition of water to a base increased its value as an antiseptic carrier. For this reason it was thought desirable to determine the effect of incorporating water in phenol ointments.

According to St. Onge (9) petrolatum is capable of absorbing 10% of water. A number of ointments containing 10% of water and various percentages of phenol and petrolatum were prepared by fusion on a water-bath. The mixtures were uniform while hot, but on cooling there was a separation into solid and liquid portions. Due to the separation no tests of antiseptic power were made.

Since phenol ointments containing 10% of water could not be prepared using petrolatum, similar ointments containing 5% of phenol were prepared in which approximately one-fourth of the petrolatum was replaced by anhydrous lanolin. As a control on the effect of the water a 5% phenol ointment in which the base consisted of 25% anhydrous lanolin and 75% petrolatum was prepared. This base, without phenol, was also tested as a control on any possible antiseptic action of the base; this base alone gave no zone.

The results in Table III indicate that a 6-mm. zone was obtained in the test of 5% phenol ointment in which the percentage composition of the base was 75% petrolatum and 25% anhydrous lanolin. This result was rather surprising in view

of the fact that it had previously been proven that an ointment containing 5% of phenol in petrolatum gave no zone. The addition of 5% and 10% of water, respectively, resulted in a zone of 7 mm., or practically the same as that obtained in absence of water. Therefore, it was apparent that the presence of small proportions of water was not of particular importance, but that the addition of anhydrous lanolin to the ointment was the essential factor in producing an ointment showing antiseptic properties.

TABLE III.—EFFECT OF WATER IN OINTMENTS CONTAINING 5% PHENOL IN BASES OF VARIED COMPOSITION.

Composition of Base.			Width of Zone.	
Lanolin anhydrous, %.	Petrolatum, %.	Water, %.	Sample A, mm.	Sample B, mm.
25	75	0	6	6
22.5	72.5	5	7	7
20	70	10	7	7

Variations in Proportion of Anhydrous Lanolin and Petrolatum.—Tests were next conducted on 5% phenol ointments in which the proportions of anhydrous lanolin and petrolatum were varied over wide limits.

TABLE IV.—EFFECT OF 5% PHENOL IN BASES CONSISTING OF MIXTURES OF PETROLATUM AND ANHYDROUS LANOLIN IN VARIOUS PROPORTIONS.

Composition of Base.			Composition of Base.		
Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.	Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.
100	0	No zone	20	80	No zone
75	25	No zone	17	83	No zone
50	50	No zone	15	85	No zone
29	71	No zone	13	87	No zone
27	73	No zone	10	90	No zone
26	74	No zone	9	91	No zone
25.5	74.5	Entire plate clear	8	92	No zone
25	75	6 mm.	7	93	No zone
24.5	75.5	Entire plate clear	5	95	No zone
24	76	Entire plate clear	4.5	95.5	No zone
23	77	Entire plate clear	4	96	No zone
22	78	No zone	3.5	96.5	No zone
			3	97	3 mm.
			2.5	97.5	No zone
			2	98	No zone
			1	99	No zone

The results in Table IV confirmed the idea that the relative proportion of anhydrous lanolin and petrolatum was a deciding factor in the antiseptic action of the ointment. When the percentage of anhydrous lanolin in the base was between 23 and 25.5% very good zones were obtained. With a base containing 3% of anhydrous lanolin a small zone resulted but when the percentage was increased to 3.5% or reduced to 2.5% there was no zone. In the case of all other proportions tested there was no evidence of antiseptic action.

Further Variations in Technique.—Up to this point the glass rods used in smearing the ointments were sterilized in a flame just before using. In some experiments on the effect of variations in temperature at which the media were solidified and at which the ointments were smeared, it appeared that the temperature of the rod might be a distributing factor. For this reason, in all further tests, the

rods were sterilized in an autoclave at 15 lbs. pressure for 40 minutes and allowed to cool to room temperature before use. In all further work the ointments were not warmed to 37° C. before smearing, but were smeared at room temperature. A final change in technique was the adoption of a circular area equivalent in area to the 2-cm. square previously used. This was done because smearing on a circular zone was easier and since the antiseptic zone was circular, the smearing of a circular area facilitated the measurements of the zone.

Further Test of Variations in Proportions of Anhydrous Lanolin and Petrolatum.—Another set of experiments was carried out with 5% of phenol in bases consisting of mixtures of anhydrous lanolin and petrolatum.

TABLE V.—EFFECT OF 5% PHENOL IN BASES CONSISTING OF MIXTURES OF PETROLATUM AND ANHYDROUS LANOLIN IN VARIOUS PROPORTIONS.

Composition of Base. Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.	Composition of Base. Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.
20	80	5 mm.	25	75	7 mm.
20.5	79.5	6 mm.	25.5	74.5	6 mm.
21	79	7 mm.	26	74	7 mm.
21.5	78.5	8 mm.	26.5	73.5	2 mm.
22	78	4 mm.	27	73	No zone
22.5	77.5	8 mm.	27.5	72.5	No zone
23	77	Entire plate clear	28	72	No zone
23.5	76.5	Entire plate clear	28.5	71.5	No zone
24	76	Entire plate clear	29	71	No zone
24.5	75.5	7 mm.	29.5	70.5	No zone
			30	70	No zone

Table V shows that with percentages of anhydrous lanolin running from 20 to 26.5% good zones were obtained, the most favorable percentage of anhydrous lanolin being between 23 and 24%.

Similar tests were made with ointments containing 2% of phenol, thus corresponding in phenol content to the U. S. P. X Ointment of Phenol.

TABLE VI.—EFFECT OF 2% PHENOL IN BASES CONSISTING OF MIXTURES OF PETROLATUM AND ANHYDROUS LANOLIN IN VARIOUS PROPORTIONS.

Composition of Base. Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.	Composition of Base. Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.
20	80	No zone	25.5	74.5	5 mm.
20.5	79.5	No zone	26	74	No zone
21	79	No zone	26.5	73.5	No zone
21.5	78.5	2 mm.	27	73	No zone
22	78	No zone	27.5	72.5	No zone
22.5	77.5	3 mm.	28	72	No zone
23	77	2.5 mm.	28.5	71.5	No zone
23.5	76.5	No zone	29	71	No zone
24	76	2.5 mm.	29.5	70.5	No zone
24.5	75.5	3 mm.	30	70	No zone
25	75	5 mm.			

As shown in Table VI, with a 2% concentration of phenol, the widest zones were obtained with bases containing 25% and 25.5% of anhydrous lanolin, although, as previously stated, for 5% phenol ointments the best proportion of anhydrous lanolin was 23 to 24%.

Since Ointment of Phenol, U. S. P. X, contains 5% of yellow wax, the effect of this ingredient on the antiseptic action was considered. A series of ointments was prepared containing 2% of phenol and 5% of yellow wax with the remainder consisting of various proportions of anhydrous lanolin and petrolatum.

TABLE VII.—2% OF PHENOL IN BASES CONSISTING OF MIXTURES OF YELLOW WAX, ANHYDROUS LANOLIN AND PETROLATUM IN VARIOUS PROPORTIONS.

Composition of Ointment.				
Phenol, %.	Yellow wax, %.	Lanolin anhydrous, %.	Petrolatum, %.	Width of Zone.
2	5	18.6	74.4	No zone
2	5	19.065	73.935	No zone
2	5	19.530	73.470	No zone
2	5	19.995	73.005	No zone
2	5	20.460	72.540	No zone
2	5	20.925	72.075	No zone
2	5	21.390	71.610	No zone
2	5	21.855	71.145	No zone
2	5	22.320	70.680	No zone
2	5	22.785	70.215	No zone
2	5	23.250	69.750	No zone
2	5	23.715	69.285	No zone
2	5	24.180	68.820	No zone
2	5	24.645	68.355	No zone
2	5	25.110	67.890	No zone
2	5	25.575	67.425	No zone
2	5	26.040	66.960	No zone
2	5	26.505	66.495	No zone
2	5	26.970	66.030	No zone
2	5	27.435	65.565	No zone
2	5	27.900	65.100	No zone

The results in Table VII indicate that none of the ointments containing yellow wax showed any antiseptic properties. Repetition of the experiment led to the same results, thus showing definitely that incorporation of yellow wax, in ointments of this composition, reduces the antiseptic properties to zero on the basis of the Reddish test.

Relative Value of Various Bases.—The next set of experiments was carried out to determine the relative value of different bases as antiseptic carriers. The following percentages of phenol were incorporated in each base by fusion: 1, 2, 5, 10, 15, 20, 25 and 50%. Petrolatum and benzoinated lard were miscible with as much as 25% of phenol but when 50% of phenol was used in each of these two bases some of it crystallized out on standing. Anhydrous lanolin was miscible with 15% of phenol but the higher percentages crystallized out. Hydrous lanolin produced homogeneous ointments with 1, 2 and 5% of phenol, but with percentages of 10% and higher the ointment separated into two layers, a solid layer and a liquid layer. Aquaphor was miscible with all proportions of phenol mentioned above. In all cases only the ointments showing no crystallization or separation were tested for antiseptic properties.

As shown in Table VIII, hydrous lanolin, Aquaphor and benzoinated lard showed antiseptic properties with lower concentrations of phenol than were required to give a zone in the case of petrolatum and anhydrous lanolin. It is worth noting that none of the individual ointment bases gave a zone with 2% of phenol,

whereas certain mixtures of petrolatum and anhydrous lanolin gave good zones with 2% of phenol.

TABLE VIII.—EFFECT OF VARYING PERCENTAGES OF PHENOL IN INDIVIDUAL OINTMENT BASES.

Phenol, %	Width of Zone in Mm.				
	Lanolin Anhydrous.	Lanolin Hydrous.	Aquaphor.	Petrolatum.	Benzoinated Lard.
1	No zone	No zone	No zone	No zone	No zone
2	No zone	No zone	No zone	No zone	No zone
5	No zone	3	2.5	No zone	4.5
10	5	*	6	4	7.5
15	8	*	6.5	5	10
20	*	*	8	5	12
25	*	*	9	8	13
50	*	*	9.5	*	*

* Not miscible in this proportion.

Theoretical Aspects.—The theoretical aspects of the action of antiseptic ointments appear to be as follows. In order for an ointment to exert an antiseptic effect it is necessary that the antiseptic substance shall leave the base and enter the underlying tissues which may harbor pathogenic bacteria. In the case where the ointment and the culture medium or tissues are immiscible, the distribution of the antiseptic substance between the ointment base and the culture medium or tissues would be in accordance with the Van't Hoff partition law, which states that, if the solvents are immiscible, there is a constant ratio of concentration of the solute in the two solvents as long as the molecular weight of the solute is the same in both. Thus, in the case of the Reddish test using phenol ointments the distribution of phenol between the ointment base and the agar medium at equilibrium would be proportional to the partition coefficient. Accordingly, if the ointment base were changed in composition in such a way that it became a poorer solvent for phenol, the partition coefficient would be altered in a direction favorable to increased antiseptic action. Another factor that might enter is the rate at which equilibrium is approached, *i. e.*, the rate of diffusion of phenol from the ointment into the medium. For example, certain concentrations of cholesterol or similar substances in lanolin or other bases might increase the rate of diffusion. In order for the antiseptic action to be apparent in the Reddish test it is necessary that the phenol reach a sufficient concentration to prevent growth within the length of time necessary for colonies to develop. A complete test of the above hypothesis has not yet been made, but it is presented here as a tentative explanation of the results.

Practical Applications.—Although the U. S. P. directs that Ointment of Phenol shall contain 2% of phenol, higher concentrations are sometimes used, for example, the British Pharmacopœia Ointment of Phenol contains 3% of phenol. It has also been reported (7) that the British Navy used phenol ointments of 20% strength. However, reports have been made (10) that the continuous use of concentrations of phenol of 5% or higher causes gangrene. For this reason the development in the present investigation of a 2% phenol ointment showing definite antiseptic properties is of interest in making available the antiseptic action of phenol at a low concentration, thus avoiding any possible bad effects of a higher concentration.

The following formula is recommended for inclusion in the U. S. P. XI:

OINTMENT OF PHENOL.

Phenol	2.0 Gm.
Wool Fat	24.5 Gm.
Petrolatum	73.5 Gm.
To make	100.0 Gm.

Melt the phenol on a water-bath, add the petrolatum, stir until the mixture is uniform, then add the wool fat. Stir, and allow the mixture to congeal.

SUMMARY.

1. A study was made of the effect of variations in the base on the antiseptic value of phenol ointments as measured by the Reddish test.

2. Tests made on 5% phenol ointments containing water, anhydrous lanolin and petrolatum showed that the presence of small proportions of water is unimportant, but that the relative proportion of anhydrous lanolin and petrolatum is the deciding factor in determining the antiseptic properties.

3. In 5% phenol ointments with a base of petrolatum and anhydrous lanolin good zones were obtained when the proportion of anhydrous lanolin in the base was between 23% and 25.5%. In similar 2% phenol ointments 25% and 25.5% of anhydrous lanolin gave the best results. In such ointments, the incorporation of 5% of yellow wax reduced the antiseptic value to zero.

4. Tests with individual bases showed that hydrous lanolin, Aquaphor and benzoinated lard gave antiseptic ointments with lower percentages of phenol than in the case of anhydrous lanolin or petrolatum.

5. An ointment of the following composition is recommended for inclusion in the U. S. P. XI: Phenol, 2 Gm.; Wool Fat, 24.5 Gm.; Petrolatum, 73.5 Gm. This ointment shows definite antiseptic properties in the Reddish test, although the U. S. P. X Ointment of Phenol shows no antiseptic value by the same test.

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COLLEGE OF PHARMACY,
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GAINESVILLE, FLA.

Aqua Sterilisata is a new official of the British Pharmacopœia, 1932. The sterilization is by autoclave or by boiling for thirty minutes. Storage in suitably closed vessels is limited to one month.

OVERCOMING INTERFERENCE FROM VOLATILE BASES IN ASSAY OF MYDRIATIC DRUGS.

BY GEORGE E. ÉWE.

Effectual means of eliminating these volatile bases and so allowing a truer estimate of the actual alkaloidal content are described.

Mydriatic drugs may contain, in addition to alkaloids, various other bases. For instance, belladonna contains volatile bases of alkaloidal and of non-alkaloidal nature,[1] which can be divided into 3 groups: pyridines, pyrrols and diamines. In the first group pyridine has already been characterized, while in the second group have been found methylpyrrolline and methylpyrrollidine. The third group contains at least one diamine.

As ordinarily segregated from vegetable drugs and their preparations mydriatic alkaloidal residues may contain large proportions of these bases. Reference to the table following will show that these residues may contain sufficient volatile bases to increase the apparent alkaloidal content by as much as 77 per cent. The volatile base content of various lots of hyoscyamus increased the apparent alkaloidal content of the drug to the extent of 66, 77, 72 and 12 per cent, respectively; while that of a lot of belladonna leaves increased the apparent alkaloidal content to the extent of 8 per cent, and the volatile base content of a lot of stramonium leaves increased the apparent alkaloidal content of the leaves to the extent of 25 per cent.

The identity of these volatile bases was not determined.

Since certain of these bases exhibit acid-neutralizing power with the indicators used in titrating the alkaloids it is a matter of importance to seek a method of freeing the alkaloidal residue of these interfering bases so as to secure a more accurate estimation of the alkaloids themselves.

The concensus of opinion is that these interfering bases are generally quite volatile. Consequently, a method of volatilization which would rid the alkaloidal residue of these bases and leave the typical alkaloids unaffected would give a more accurate determination of the alkaloids.

In selecting a method of volatilizing these interfering bases recognition must be given to the susceptibility of mydriatic alkaloids to hydrolysis and overheating. The volatile bases are eliminated by means of heat, aeration or spontaneous volatilization. The use of heat is objectionable as overheating at water-bath temperatures as well as prolonged heating in the air at lower temperatures may cause destruction of a part of the alkaloids. A few experiments indicate that a 5-minute heating of a flask containing mydriatic alkaloidal residue on a covered water-bath appears to effect elimination of the volatile bases without material effect upon the alkaloids but such a heat treatment is not to be depended upon to yield comparable results in different hands. Aeration with ordinary atmospheric air is objectionable since the moisture in such air may hydrolyze the alkaloids to some extent. Aeration with dried air is inefficient in removing the volatile bases unless quite prolonged as the bases come off quite slowly, possibly because of the viscous condition often assumed by alkaloidal residues from vegetable drugs and their preparations. Aeration at not above 40° C. with dried air to apparent dryness followed by calcium

[1] *J. pharm. Belg.*, through *Pharm. Era*, 54 (1921), 274.

chloride desiccator treatment to constant weight (usually within 24 hours) appears to be a safe and efficient method of elimination of the volatile bases without danger of concurrent hydrolyzation of the alkaloids. The following procedure has been found to be practical and to give concordant results:—evaporate the chloroformic extracts to 2 cc. in an Erlenmeyer flask, then to apparent dryness at not above 40° C. by means of a current of air (dried by passing through a long column of granular anhydrous calcium chloride) drawn over the surface of the liquid in the flask, taking care to spread the alkaloidal solution in a thin layer around the sides of the flask as the drying is concluded; place flask on its side in a calcium chloride desiccator to constant weight, blow out flask with a current of dried air, immediately add 2 cc. of chloroform, a measured excess of standard sulphuric acid and 5 cc. of water, shake to dissolve the alkaloid, boil off the chloroform on a water-bath, cool and titrate immediately.

The results outlined below were obtained by different methods of preparing mydriatic alkaloids for titration and illustrate the effect of varying procedures upon assay results:

Procedure No.	Hyoscyamus No. 1, Per Cent.	Hyoscyamus No. 2, Per Cent.	Hyoscyamus No. 3, Per Cent.	Hyoscyamus No. 4, Per Cent.	Hyoscyamus No. 5, Per Cent.	Hyoscyamus No. 6, Per Cent.	Belladonna, Per Cent.	Stramonium, Per Cent.
1	0.115, 0.116 } 0.1155			0.131	0.125	0.155	0.703, 0.708 } 0.705	0.323, 0.328 } 0.326
2	0.0998, 0.0875 } 0.0937						0.693, 0.688 } 0.690	0.299, 0.289 } 0.294
3	0.0623, 0.0654 } 0.0638	0.0702, 0.0702 } 0.0702	0.094, 0.096 } 0.095				0.639, 0.654 } 0.647	0.260, 0.252 } 0.256
4	0.0654, 0.0534 } 0.0594							
5	0.0718, 0.0671 } 0.0695							
6		0.0561, 0.0532, 0.0505, 0.0561 } 0.0540						
7		0.0479, 0.0434 } 0.0457						
8			0.095, 0.095 } 0.095				0.649, 0.654 } 0.651	0.260, 0.269 } 0.264
9			0.111, 0.106 } 0.1085					
10			0.095, 0.096 } 0.0955					
11			0.104, 0.109 } 0.1065				0.688, 0.683 } 0.685	0.294, 0.304 } 0.299
12				0.074	0.0723	0.139, 0.138 } 0.138	0.644, 0.649 } 0.647	0.252, 0.269 } 0.260
13					0.0649	0.131		

NOTE: The various results in a given series were obtained on aliquots of the final chloroformic extracts containing the alkaloids, thus limiting the differences in results solely to the different methods of preparing the alkaloids for titration.

The procedures mentioned in the foregoing tables are as follows:

1. Evaporate to 2 cc., add standard acid, boil off chloroform.
2. Evaporate just to dryness on covered water-bath.
3. Evaporate on water-bath, then heated on covered water-bath for 5 minutes.
4. Same as preceding test but heated for 10 minutes.
5. Evaporate just to dryness; flask kept on its side in calcium chloride desiccator over night.

6. Evaporate to 5 cc., dried at 40–50° C. in air to constant weight.

7. Same as preceding test but dried at 60–70° C.

8. Evaporate to 2 cc. on water-bath; to dryness in current of dry air at 40° C.; flask kept on its side in calcium chloride desiccator over night (constant weight), chloroform and standard acid added; chloroform boiled off.

9. Evaporate to 5 cc. on water-bath; to dryness in current of dry air at 40° C.; dissolved in neutral alcohol; standard acid added.

10. Same as preceding test but flask kept on its side in calcium chloride desiccator over night (constant weight) before adding alcohol.

11. Evaporate to 5 cc. on water-bath; 5 cc. neutral alcohol added; to dryness in current of dry air at 40° C.; dissolved in chloroform; standard acid added; chloroform boiled off.

12. Same as preceding test but flask kept on its side in calcium chloride desiccator to constant weight before dissolving in chloroform and titrating.

13. Same as preceding, except flask kept in desiccator 24 hours after constant weight.

In the JOURNAL, A. PH. A., 16 (1927) 1039–1044, Watkins and Palkin described a method of assaying hyoscyamus which gave yields of alkaloids more than 3 times as great, in some cases, as those obtained by the U. S. P. IX and X procedures. In Watkins and Palkin's method the alkaloids are prepared for titration by evaporating the final chloroformic solution of the alkaloids to about 5 cc., adding a measured excess of standard sulphuric acid, evaporating off the chloroform, cooling and titrating. Their method thus includes the larger part of the volatile bases which may be present in the alkaloidal residue but avoids overheating and exposure to the moisture of the air. The U. S. P. IX prescribed that the alkaloids of hyoscyamus be prepared for titration by evaporating the final chloroformic solution of the alkaloids to dryness, treating the residue twice with 5 mils of ether and evaporating to dryness each time, followed by dissolving the alkaloids in a measured excess of standard sulphuric acid and titrating. This method thus eliminated more or less of the volatile bases that may have been present but subjected the alkaloids to possible overheating and hydrolyzation. The U. S. P. X states that a solution of the alkaloids of hyoscyamus should not be evaporated to dryness on the water-bath because these alkaloids "are very sensitive to heat" and that "after the last trace of chloroform has evaporated spontaneously, 1 or 2 cc. of neutral alcohol should be added and warmed but not entirely evaporated, then cooled and titrated immediately." Thus the U. S. P. X method effects a partial elimination of the volatile bases and avoids any possible loss through overheating but subjects the alkaloids to possible hydrolyzation through prolonged contact with the moisture of the air.

Thus it is evident that the higher results returned by the Watkins and Palkin method are occasioned, in part, at least, through the inclusion by their method of the larger part of the volatile base content of the alkaloidal residue. Avoidance of loss by overheating and hydrolyzation of the alkaloids also may have contributed to the higher results returned by their method. Whether or not the Automatic Extractor described by Watkins and Palkin actually extracts more alkaloid from a given hyoscyamus than can be extracted by simple maceration or percolation is a question to be decided. Several different lots of hyoscyamus examined in this Laboratory returned essentially the same proportion of alkaloids by both the automatic extractor and simple percolation method, provided every other detail of the assay process was identical. While this number of comparisons is not conclusive it

may be indicative that the Automatic Extractor is not actually more efficient in extracting alkaloids from hyoscyamus than is the simple percolator.

In the assay of mydriatic drugs the U. S. P. X directs that the final chloroformic solution of the alkaloids be evaporated spontaneously. This is an extremely tedious operation and exposes the alkaloids to prolonged contact with the moisture of the air with possible resultant hydrolysis of some of the alkaloids. The dried-air-desiccator treatment of preparing mydriatic alkaloids for titration described above protects the alkaloids against hydrolysis and overheating and essentially eliminates any interfering volatile bases which may be present. Consequently, this treatment disposes of these disturbing factors which contribute to the disagreements often arising between analysts of mydriatic drugs and seems worthy of consideration for inclusion in the U. S. P. description of the assay process for mydriatic drugs.

SUMMARY.

As ordinarily segregated from vegetable drugs and their preparations mydriatic alkaloidal residues may contain large proportions of volatile bases which greatly increase the apparent alkaloidal content of the drugs or preparations. Effectual means of eliminating these volatile bases and so allowing a truer estimate of the actual alkaloidal content are described.

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The publicity is authorized by a Joint Committee of the Pharmaceutical Society of New South Wales and The Federated Pharmaceutical Service Guild of Australia. The character of the publicity is based on the professional service of pharmacy and its relation to Public Health.

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WHAT ABOUT DRUG EXTRACTION?*

BY WILBUR L. SCOVILLE.

First, what about the preliminary maceration, before packing and before percolation are started?

Up to the ninth revision of the Pharmacopœia drugs were moistened, packed in a percolator and saturated with the menstruum; then allowed to macerate for (usually) twenty-four to forty-eight hours before the flow was started. In the ninth revision the directions were changed to moisten, allow to stand six hours, then pack, etc.

Why the extra six hours? Is it to allow the drug to swell before packing? Is six hours necessary for swelling? If anybody has explained I have failed to hear.

I decided to ask a micrometer. I was not acquainted with one, but I could be introduced. A friendly carpenter kindly provided me with some little blocks of wood, planed to a smooth surface and measuring about 0.8 inch on the sides and about $^1/_8$ inch thick. A number of such blocks of soft pine and corresponding blocks of hard maple were furnished.

I measured each block for thickness at each of the four corners and also at the center, then placed it in water or in various strengths of alcohol, such as 24%, 49%, 77%, 87% and 95%. Each was then re-measured at intervals up to 48 or 72 hours of maceration.

From a series of more than 400 measurements averaging about 25 on each block, I learned how to use a micrometer and also that wood swells quite rapidly in water and in the weaker alcoholic liquids containing one-half or more water. The swelling was most rapid at the edge, slower at the center. The greater portion of swelling occurred within two hours in these liquids. Swelling occurred across, not with the grain.

The hard wood swelled about twice as much as the pine in most cases. The stronger alcohol swelling was less and was slower. In 87% alcohol swelling was slight and in 95% alcohol I found no swelling after soaking 72 hours.

Having practiced on smooth blocks, I then tried some drugs. I found it a different matter to measure irregular pieces and curved surfaces and only by marking each point for measurement could anything like concordant results be obtained.

The figures which follow give first the minimum, maximum and mean thicknesses in fractions of an inch of each piece. Not less than four measurements nor more than six—usually five measurements—were taken on each piece. The swelling is reported in fractions of an inch as the average of the four to six measurements after the stated interval of maceration.

The drugs selected represent barks, roots, seeds, buds, woods and leaves.

THE SWELLING OF DRUGS IN DIFFERENT MENSTRUA.

	Measurements.			Increase.			
	Minimum.	Maximum.	Mean.	$^1/_2$ to 2 hrs.	3 to 6 hrs.	24 hrs.	48 to 72 hrs.
Quassia Wood							
Water	0.070	0.098	0.078	0.004	0.005	0.005	0.005
49% Alcohol	0.048	0.090	0.075	0.005	0.007	0.007	0.007
73% Alcohol	0.104	0.130	0.118	...	0.003	0.004	0:005
95% Alcohol	0.097	0.102	0.101	...	0.002	0.002	0.002

* Section on Practical Pharmacy and Dispensing, Toronto meeting, 1932.

	Measurements.			Increase.			
	Minimum.	Maximum.	Mean.	½ to 2 hrs.	3 to 6 hrs.	24 hrs.	48 to 72 hrs.
Sandalwood							
Water	0.114	0.167	0.141	0.006	0.007	0.007	0.007
49% Alcohol	0.093	0.125	0.109	0.004	0.004	0.005	0.006
73% Alcohol	0.118	0.172	0.160	...	0.006	0.007	0.007
95% Alcohol	0.093	0.151	0.100	...	0.002	0.001	0.001
Cinchona Bark (U. S. P.)							
Water	0.114	0.126	0.118	0.005	0.008	0.015	0.010
49% Alcohol	0.112	0.126	0.118	0.000	0.004	0.012	0.011
73% Alcohol	0.121	0.125	0.123	...	0.002	0.009	0.009
95% Alcohol	0.105	0.116	0.111	...	0.000	0.000	0.000
Cinchona Root Bark							
Water	0.098	0.157	0.121	0.014	0.013	0.018	0.018
49% Alcohol	0.083	0.125	0.106	0.002	0.004	0.012	0.011
73% Alcohol	0.093	0.112	0.098	0.002	0.005	0.016	0.015
95% Alcohol	0.080	0.091	0.086	...	−0.002	−0.002	−0.002
Cascara Sagrada Bark							
Water	0.088	0.092	0.090	0.012	0.040	0.053	0.053
49% Alcohol	0.090	0.095	0.092	0.005	0.017	0.025	0.029
73% Alcohol	0.090	0.101	0.095	...	0.014	0.016	0.017
95% Alcohol	0.100	0.120	0.110	−0.008	−0.008	0.003	0.003
Wild Cherry Bark							
Water	0.046	0.074	0.052	0.009	0.004	0.013	0.014
49% Alcohol	0.047	0.056	0.050	0.005	0.007	0.007	0.007
73% Alcohol	0.069	0.077	0.072	...	0.001	0.002	0.002
95% Alcohol	0.056	0.095	0.075	...	0.000	0.000	0.000
Aconite Root							
Water	0.170	0.208	0.189	0.036	0.072	0.075	...
49% Alcohol	0.186	0.220	0.205	0.028	0.040	0.038	...
73% Alcohol	0.124	0.178	0.148	...	0.003	0.006	0.003
95% Alcohol	0.186	0.253	0.213	...	−0.001	−0.004	−0.017
Gentian Root							
Water	0.104	0.130	0.118	0.016	0.039	0.047	0.047
49% Alcohol	0.083	0.100	0.091	0.001	0.009	0.008	0.009
73% Alcohol	0.078	0.090	0.089	...	0.006	0.008	0.007
95% Alcohol	0.100	0.127	0.106	...	0.000	0.001	0.000
Licorice Root							
Water	0.082	0.100	0.094	0.015	0.018	0.018	...
49% Alcohol	0.085	0.108	0.094	0.008	0.008	0.009	...
73% Alcohol	0.091	0.097	0.094	0.005	0.008	0.008	...
95% Alcohol	0.067	0.088	0.076	...	−0.002	0.000	−0.002
Stillingia Root							
Water	0.070	0.086	0.081	0.009	0.011	0.013	0.013
49% Alcohol	0.072	0.089	0.078	0.005	0.007	0.007	0.007
73% Alcohol	0.062	0.083	0.076	0.002	0.002	0.002	0.001
95% Alcohol	0.069	0.092	0.082	0.000	0.000	0.000	0.000
Cacao Bean							
Water	0.328	0.351	0.340	0.023	0.041	0.050	...
49% Alcohol	0.290	0.320	0.307	0.011	0.018	0.017	...
73% Alcohol	0.335	0.380	0.361	...	...	0.022	0.021
95% Alcohol	0.302	0.344	0.327	...	...	−0.001	−0.001

	Measurements.			Increase.			
	Minimum.	Maximum.	Mean.	½ to 2 hrs.	3 to 6 hrs.	24 hrs.	48 to 72 hrs.
Cocculus Indicus Seed							
Water	0.332	0.395	0.359	0.025	0.029	0.029	...
49% Alcohol	0.330	0.435	0.376	0.010	0.020	0.014	...
73% Alcohol	0.324	0.414	0.365	...	...	0.019	0.017
95% Alcohol	0.353	0.429	0.391	...	...	0.001	0.006
Nux Vomica Seed							
Water	0.147	0.168	0.160	0.004	...	0.017	0.039
49% Alcohol	0.160	0.173	0.169	0.003	0.004	0.015	0.039
73% Alcohol	0.204	0.226	0.215	0.002	0.002	0.014	0.026
95% Alcohol	0.181	0.195	0.187	0.000	−0.002	0.000	0.000
Pumpkin Seed							
Water	0.087	0.095	0.091	0.005	0.006	0.024	0.026
49% Alcohol	0.070	0.088	0.077	0.002	0.003	0.027	...
73% Alcohol	0.078	0.085	0.080	0.005	0.009	0.008	0.010
95% Alcohol	0.073	0.085	0.080	0.000	0.000	0.000	0.000
Balm of Gilead Buds							
Water	0.166	0.263	0.217	0.025	0.029	0.029	...
49% Alcohol	0.165	0.297	0.237	0.010	0.020	0.014	...
73% Alcohol	0.168	0.245	0.205	...	...	−0.006	−0.008
95% Alcohol	0.148	0.248	0.204	...	...	−0.013	−0.021
Mullein Leaves							
Water	0.100	0.199	0.136	0.018	0.017	0.025	...
49% Alcohol	0.109	0.145	0.121	0.011	0.010	0.014	...
73% Alcohol	0.097	0.120	0.104	...	...	0.000	0.000
95% Alcohol	0.098	0.131	0.109	...	...	−0.003	−0.011

These figures disclose some very glaring and annoying inconsistencies. For instance, quassia shows (by figures) a greater swelling in diluted alcohol than in water—and these figures were rechecked. Cascara shows first a shrinkage, then a swelling in 95% alcohol. And there are other very doubtful results. Also the lines are not directly comparative because different thicknesses of drugs were used in the individual tests.

A part of these seeming errors can be ascribed to lack of skill on the part of the operator, part to the real difficulty of measuring accurately any change in a material of irregular form where each measurement must be made on exactly the same spot where the surface is curved, and part to the difficulty of comparing measurements on a surface which is first firm and afterward soft and at varying intervals of time.

Aconite root and gentian became very soft—almost mushy—in water and in diluted alcohol, but remained hard in strong alcohol. Other drugs softened to a lesser extent in water—except perhaps mullein leaves—and all remained hard in alcohol. Whether alcohol actually shrinks the tissues or only hardens them is uncertain.

The question also remains whether the swelling or the softening effect is the greater factor in the extraction of drugs by the menstruum.

Another probable source of error in these measurements is the solvent power of the menstruum. With Balm of Gilead Buds, for instance, alcohol takes out considerable resinous material and by this method one does not know whether the reduced size of the buds is due to shrinkage of the tissues or to the extraction of resin or perhaps to both.

Several leaves were tried that are not reported because the normal thickness of the leaves—usually 0.005 to 0.007 inch—or on the midrib up to 0.012 inch—is too small to make a relative change certain, particularly when the tissues are softened. Mullein leaf is much thicker but it softens much in water and becomes brittle in alcohol, and the hairy surface makes an uncertain foundation for measurement. It is the only leaf tried that gave any comparable results, but these are not very satisfactory.

While the results are not very gratifying they do not show any need for long maceration before packing. They indicate that swelling takes place quite rapidly in water and that it diminishes as the alcoholic content becomes greater. This is what we would expect.

Roots and seeds appear to swell in larger measure than do barks and woods. The rate of swelling appears to be proportionate to that of penetration, hence swelling will be more rapid in a comminuted drug than when whole.

In water the greater part of swelling occurred in some cases within 15 minutes. Some of the measurements reported under "1/2 to 2 hours" were made after 15 minutes of immersion, some after about 30 minutes, 45 or 60 minutes, etc., as opportunity permitted. To save space and simplify the results they are all grouped as in the tabular report.

In alcoholic liquids swelling diminishes both in time and degree in some proportion to the alcohol present.

Taking the results as a whole I do not find justification for the preliminary six hours of maceration now directed. If the question relates to the rate of solubility of the active principles in the drug, and to time for osmosis, the maceration period after packing and saturation with the menstruum will take care of that.

My own most definite conclusion from the figures obtained is that this method for obtaining the facts is probably not the best that can be used. Another method was tried on gentian which shows a different angle on the subject.

Having a specially graduated cylinder at hand, of 25 cc. capacity and graduated so that tenths of a cubic centimeter could easily be read, this was used to measure the volume of ground gentian under the influence of different menstrua.

Five grams of the gentian, in about No. 30 powder, was placed in the cylinder, gently tapped down and the volume read. Then the menstruum was added, the mixture shaken until the drug was thoroughly wetted, the cylinder filled above the capacity with the liquid, again shaken well and then allowed to stand quietly about 20 hours. Then the volume of the drug was measured. Following are the results obtained.

5 Gm. dry = 14.2 cc., and 26.0 cc. in water = 183% expansion.
5 Gm. dry = 14.1 cc., and 21.6 cc. in 49% alcohol = 153% expansion.
5 Gm. dry = 14.1 cc., and 17.1 cc. in 73% alcohol = 121% expansion.
5 Gm. dry = 13.8 cc., and 14.6 cc. in 87% alcohol = 105% expansion.
5 Gm. dry = 14.1 cc., and 12.7 cc. in 95% alcohol = 90% of original.
5 Gm. dry = 13.8 cc., and 12.7 cc. in petroleum ether = 92% of original.

In these measurements the buoyancy of the liquid will affect the result and it will vary in the different cases. The results are not therefore accurately comparable. Perhaps a mixture of petroleum ether and carbon tetrachloride in proportions that will show the mixture to have the same specific gravity as the menstruum to be tested might provide a factor for correcting the buoyancy effect.

Or perhaps a different apparatus in which the liquid displaced by the swelling can be measured (or weighed) may be better.

Measurements involving the ground drug as it is used for extraction would correspond to the conditions of percolation and perhaps give us a better picture of what is taking place in actual operations.

II.

WHAT ABOUT THE RATE OF FLOW?

Both the Pharmacopœia and the National Formulary direct that drugs be percolated slowly in all cases. A uniform rate of ten to twenty drops of percolate per minute is directed for the fluidextracts and is inferred for tinctures. No differences are made for the various drugs, nor for the menstrua. But drugs differ in structure and in the ease with which they yield their constituents. Capsicum, for instance, has relatively large cells containing the oleoresin, and is very easily extracted. Cantharides, on the other hand, is especially difficult to extract. If drugs differ in structure and in the solubility of their active constituents, it is reasonable to expect that they should be treated differently.

The object of the Pharmacopœia seems to be that everything that is soluble in the menstruum should be completely extracted from the drug. On this basis a slow percolation insures the maximum of extracted matter.

On the other hand menstrua are selected because of what they exclude as well as for what they dissolve. If discrimination applies in the selection of menstrua, may it not also apply in methods of use?

Cinchona is a case in point. This drug contains alkaloids to which its medicinal value is due and it also contains a considerable amount of tannin which is chemically antagonistic to the alkaloids and which is the main cause of precipitation and deterioration in the preparations. Any menstruum which will extract the alkaloids will also dissolve the tannin. But if a proper acidulated menstruum be selected we find that it extracts the alkaloids rapidly and the tannin slowly. So if the drug be subjected to a relatively short preliminary maceration and then extracted rapidly, the alkaloids will all be taken out while the tannin, being more slowly soluble, is largely left behind. A more stable and entirely active preparation is obtained in this way.

Rhubarb is another instance. This drug contains anthraquinones, which exercise a cathartic action, and tannin which is astringent and therefore therapeutically antagonistic. And rhubarb preparations are notorious for precipitation.

I used to be told that rhubarb was the ideal drug for the treatment of diarrhea (witness the formerly popular Sun Cholera Mixture) because it first acted as a cathartic and removed offending matter from the bowels, then acted as an astringent. This sounded well until one questions how it may happen that tannin, which exercises its astringent action promptly on contact, can be induced to contradict its nature and do the Gaston-Alphonse stunt with a cathartic principle whose nature is to act slowly. Also, when we find that this astringent body is the part which hydrolyses in the preparation and then is deposited as a precipitate we have to conclude that this idealistic action is a delusion.

But we do find that the tannin in rhubarb is consistent in that it dissolves more slowly than does the anthraquinones and that by rapid extraction we secure actively

cathartic preparations which are more stable in that there is less precipitation or change.

This plan of rapid extraction to obtain better products—not merely to save time—is new and has been tried on but a few drugs. It seems that there may be considerable advantage in it for a number of drugs, particularly those that contain tannin but are not used primarily as astringents. Wild cherry and uva ursi, for instance.

III.

WHAT ABOUT THE SELECTION OF A MENSTRUUM?

If a selected menstruum dissolves the active principle of the drug and produces a liquid preparation which remains clear, it has been concluded that this menstruum is a proper one for that drug. The development of this plan has led to the use of some twenty or more different menstrua, many of which were selected without any relation to other mixtures in use or without adequate study of the drug. So many varieties of menstrua are unnecessary and illogical.

What are the factors that should govern the selection of a menstruum?

First, of course, the character and solubility of the active principle. It would appear that this has been almost the sole consideration in some cases.

Second, the character of the preparation. If it remains clear and presentable, that has been taken as evidence of the suitability of the menstruum. But that is not sufficient—as will be shown later.

Third, the effect of the menstruum upon other constituents of the drug. This is now noted in that we have different menstrua for pilular and for powdered extracts of the same drug, and frequently the menstruum for an extract is more strongly alcoholic than for the corresponding fluidextract. The stronger alcohol extracts less inert material and allows of a more concentrated product.

Fourth, the action of the menstruum upon the drug structure. This has been recognized rather vaguely in the size of powder directed, but this alone is not sufficient. An attempt to get some more fundamental information on this question is shown in the first section of this present paper.

As regards the first consideration—the solubility of the active principle—there is often too wide a range to be determinative. Tannin will dissolve in water, in alcohol or in any mixture of the two. So will alkaloids, as they exist in drugs.

Even resins appear to be slightly soluble in water though not enough to warrant any consideration of water as a menstruum for resinous drugs. But with resinous drugs while 95% alcohol would seem to be the ideal menstruum because of its solvent property we actually can extract more resin (soluble in 95% alcohol) with 87% alcohol, or in some cases with 77% alcohol than with 95% alcohol, under corresponding conditions. How can we account for that fact?

The second consideration, that of the appearance of the preparation, while often sound has yet led into error. Tincture of Krameria, for instance, remains a beautifully clear, deep red liquid on aging, but its tannin hydrolyzes within a few days, probably forming gallic acid which has a very different action. The only reliable official astringent preparation at the present time is Tincture of Nutgall which is made without water. All the rest are astringent only for a short period,

then the tannin is changed either into gallic acid which remains in solution or into phlobaphene, which precipitates.

Two of the most important galenical preparations in use to-day—Fluidextract of Ergot and Tincture of Digitalis—remain clear on aging but show a marked deterioration in activity. Probably there are others that lose in efficiency which we do not yet recognize as deteriorating.

An interesting question comes up in this line. Though the alkaloids of practically all the alkaloidal drugs can be extracted by means of acidulated water, experience has shown that more reliable results are obtained with quite strongly alcoholic menstrua—in the larger number of instances a 73% or 77% alcohol. An adequate answer to this question alone would probably throw considerable light on the subject of principles governing drug extraction.

The third consideration, that of rejecting an excess of inert material, is much simpler. As already noted it is now recognized in the manufacture of powdered extracts by extracting with strong alcohol. This does not dissolve any gums and it dissolves less sugars, and other inert material, so producing a more concentrated product.

Since it has been shown that the inert material in a drug modifies the action of the therapeutically active principles and thus is desirable, this exclusion must not be carried further than is necessary. We still use preparations of the drugs even in cases where the active principles are available in pure and economical form.

The fourth consideration—that of the action of the menstruum upon the drug structure—has had very little attention. This is concerned with the swelling and softening of the drug, the permeability of the cells, relative fineness of powders, dialysis, rate of solubility of the constituents, influence of constituents upon each other, both physical and chemical, etc.

Considering that drug extraction is fundamentally and distinctly a pharmaceutical operation of importance it is not creditable to our scientific standing that we know so little about these matters. We lack a scientific basis for the most distinctive pharmaceutical operation. We are helpless in the face of a new problem.

Consider Tincture of Digitalis as an instance. This drug contains glucosides which are soluble in dehydrated alcohol and are easily hydrolyzed by the presence of water. The drug is easily extracted by diluted alcohol, but a tincture made with that menstruum deteriorates rapidly and almost completely. Seventy-seven per cent alcohol makes a better preparation but this is also unstable. European workers have shown that dehydrated alcohol makes a stable and so a reliable tincture, but by our present method of extraction only about half the activity of digitalis can be extracted with that menstruum. Even 95 per cent alcohol takes out only about half the activity. This is not a question of solubility. Then why does not strong alcohol extract the glucosides? Obviously we do not know enough about the action of alcohol upon the drug structure or upon other constituents to intelligently tackle the problem.

Fluidextract of Ergot is another and similar instance. Recent investigations have established two alkaloids as responsible for the activity of ergot. These are soluble in alcohol but not in water, and are easily oxidized. The present fluidextract, made with diluted alcohol, is very unstable and not at all satisfactory. Again logic points to strong alcohol as a proper menstruum but again we find that alcohol

fails to extract the activity. In this instance we know that heat also destroys the activity so it seems reasonable to suspect that some other constituents of the drug may hinder the extraction of the active alkaloids, perhaps by coagulation. But we are entirely in the dark as to whether the difficulty lies in the drug structure or in interfering constituents.

If pharmacy is to claim any position in the scientific world it must place its most distinctive function on a more scientific basis. Pharmacy has contributed much to science which is not credited rightly because other branches have been accorded the credit. This cannot be altogether avoided, but advances which are so distinctively pharmaceutical that they cannot be miscredited are much needed and are too rare.

Our difficulties are our opportunities.

"Some ships sail east, and some sail west
though the selfsame wind doth blow;
It's the set of the sail, and not the gale
that decides where the ship shall go."

Scientific advancement lies in learning how to trim our sails of knowledge so as to overcome obstacles.

IV.

Finally, what about drug extraction as a problem? Is the study worth while? Aren't drugs—natural vegetable drugs—going out of use? Haven't we enough better and more scientific methods and means of treating disease to make natural drugs and their galenical preparations obsolete in a short time?

Well, what is the evidence? What do the modern developments indicate?

Fifty years ago natural drugs, mineral salts and a few animal drugs constituted most of the materia medica. The retail pharmacist of that day prided himself upon his ability to identify and select drugs and upon his personal skill in making tinctures, pills, plasters, elixirs and the various medicaments then in use.

Then synthetic chemistry invaded the field. Antipyretics came first, acetanilid leading and followed by a host of others, some synthetics, some mixtures, most of which have fallen by the way, but acetanilid, phenacetin, antipyrin and amidopyrine remain. These have greatly reduced the use of aconite but they have not replaced it. We just have a greater choice of antipyretics.

Then salicylates developed, giving us a synthetic oil of wintergreen and reducing the use of salicin and sodium salicylate by providing a variety of forms of salicylates with various advantages. Salicylate medication has increased because of the advantages, but the natural forms are still in use.

A later development has been that of hypnotics. We now have barbituric acid and derivatives thereof which possess a hypnotic action different from that of any natural drug. Again an increase in the variety of medicinal agents, but no natural drug displaced.

A long-continued attempt has been made to displace opium and coca by means of synthetic analgesics but with slight success. We have new analgesics which possess some advantages, but the natural drugs still occupy a firm position in materia medica. Chemists are still working to find products which may possess superior all-around advantages over these drugs, but without complete success thus far.

Anthelmintics have received attention from synthetic chemists more recently and carbon tetrachloride, tetrachlorethylene and thymol have come into use for this purpose. But nature's santonin, male fern and chenopodium still hold a strong place in worm treatment.

Anæsthetics have always been of the synthetic type but even these have not been able to run whisky out of use—to our political sorrow.

Synthetic products, then, have enlarged our materia medica and reduced our dependence upon natural drugs, but the latter still hold some advantages and show no signs of leaving the field.

A second important development of the half century is that of biological products: vaccines, serums, antitoxins, immunogens, etc. These have had much attention and have made a permanent place in treatment—less of disease than as preventives of disease. They are specific medicaments and while serums and antitoxins have a valuable place in the treatment of acute conditions in a limited number of diseases, the tendency of bacterio-biological products is more and more toward prophylactic uses. Their most important province is the prevention of disease. They function mostly before drugs are needed. They touch only the infectious types of disease and these are only a part of mankind's ills. They prevent much more than they cure—which is better but does not obliterate the need of drugs.

The most dramatic development of the later years has been that of the hormones—the active principles of the endocrine glands. This is a vicarious form of medication in that a normal gland of an animal is made to supply the need of the deficient gland in an individual. Since the endocrine glands are nature's factories for manufacturing hormones as needed, it follows that the hormonic effect is temporal and evanescent. They stimulate other organs to action. They supply impulse rather than action.

In many instances the hormones stimulate so promptly and powerfully as to be dramatic. Epinephrine, one of the first of the hormones to be employed, illustrates this. In cases of shock so severe as to cause heart action to cease, epinephrine has been injected into the heart muscle and the person who was seemingly dead has come to life. Such an effect is striking and naturally draws attention. The subsequent condition will depend upon natural recuperative powers, not on the initial action of epinephrine. For prolonged action it fails to meet the need. There are hundreds of persons with weak hearts who keep going, many of them at work, by the aid of digitalis who would succumb if they were dependent upon epinephrine. In an emergency the latter is the important agent; for steady and prolonged action digitalis is much superior.

Insulin is another instance. In this case no effective substitute has yet been found though plants are known which have an insulin-like action but not strong or dependable enough to take its place. Insulin supplies the impulse for assimilation of sugar in the diabetic. But its effect is all over in a few hours and the patient must take a fresh dose every day. It has no curative effect upon the disease. Hope still stays strong with plant chemists that some day a drug will be found which will not only supply the immediate needs of the diabetic but will be curative as well.

These two are typical of the general action of endocrine hormones. They are

peculiarly emergency agents. With the exception, perhaps, of the thyroid gland, they are in general not curative.

The pituitary body will come to the rescue of an exhausted mother, but ergot may prevent the exhaustion.

The dramatic effects which are sometimes obtained through the aid of these hormones has tended to raise unwarranted hopes as to their usefulness and blinded us to their ephemeral character. This is not a depreciation of the value of hormones in medicine; it is rather a new appreciation of old drugs.

Finally, consider the vitamins.

Fifteen years ago dieticians considered that when they understood the calorific value and digestibility of a food that was all that science could tell them about foods. To-day consideration of vitamins has almost obscured that of calories, and foods have become drugs. The leaven has become of more consequence than the bread. Wheat fields are giving way to spinach pastures. The fishes have been changed from brain-food to nose and throat remedies and also supplement the bone-food. The humble are beginning to inherit the earth.

And who knows whether we have yet discovered the real curative powers of vegetable drugs? They still hold a strong place in materia medica. They still baffle us to explain their effects in full. They maintain a mystic value, even with physicians.

I, for one, am not willing to concede that vegetable drugs are as yet threatened with obscurity. They are still worthy of pharmaceutical study.

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AN EXPERIMENTAL STUDY OF THE DETERIORATION AND ASSAY OF SPIRIT OF ETHYL NITRITE.

BY MARVIN J. ANDREWS.

(*Continued from page 807, August 1932.*)

STUDY OF THE EFFECT OF ADDED PRESERVATIVES.

The addition of some foreign substance intended to serve as a preservative has been one of the methods most frequently suggested for improving the keeping qualities of this preparation. The different substances which have been recommended for this purpose in the past are given in Table II. Of these, sodium bicarbonate, magnesium carbonate, potassium carbonate and glycerin have been most frequently mentioned and were therefore included among the substances selected for the experiments of this series.

In the first group of tests made, sodium bicarbonate and magnesium carbonate were used. In each case an amount equal to about 1 per cent of the spirit was added. Both salts had been used by other investigators as previously shown, and were used by them to neutralize the acid as rapidly as it was formed, as it was believed that the presence of acid was one of the principle causes of deterioration. A sample of the unaltered spirit was stored along with these two samples for comparison. The rate of deterioration of all three is shown in Tables IX, X and XI.

The second group of substances studied embraced glycerin and castor oil. Here again the amount added was about 1 per cent of the volume of the spirit.

Glycerin was given a trial because, as already stated, it is mentioned as having been used by other investigators. Castor oil, a fixed oil soluble in alcohol, was added with the idea that the effect on the surface tension would tend to retard the loss of ethyl nitrite by evaporation.

A third group of salts, Rochelle salt, disodium phosphate and potassium carbonate, were used in another series of tests. These were added in amounts equal to about 0.1 per cent of the spirit. The first two were tried as it was thought that they might exert a buffer action on the preparation and tend to stabilize it. The effect of the potassium carbonate would naturally be the same as that of the substances used in the first series, and it is only for the purpose of comparison that this salt was used.

The fourth and last series of these tests was carried out to determine the value of 0.1 per cent of saponin as an added preservative. The saponin used was the product of Merck & Co., Inc., a glucoside obtained from *Saponaria officinalis*, L., and existing in other plants, particularly in the bark of Quillaja Saponaria, and labeled pure (9). It was tried because it was thought the effect on the surface tension of the preparation would retard the loss of ethyl nitrite by evaporation.

TABLE X.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 1% SODIUM BICARBONATE.

	Assay Results.			*Loss of Ethyl Nitrite in Per cent.*		
		Direct Sunlight.[7]			Direct Sunlight.[7]	
Date.	White glass, per cent.	Amber glass, per cent.	Date.	White glass, per cent.	Amber glass, per cent.
8/16/29	4.32	4.32	8/16/29	0.00	0.00
8/29/29	0.20*	3.09*	8/29/29	95.45	28.42
3/12/30	0.00	0.15	3/12/30	100.00	96.55

TABLE XI.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 1% MAGNESIUM CARBONATE.

	Assay Results.			*Loss of Ethyl Nitrite in Per Cent.*		
		Direct Sunlight.[1]			Direct Sunlight.[1]	
Date.	White glass, per cent.	Amber glass, per cent.	Date.	White glass, per cent.	Amber glass, per cent.
8/16/29	4.12	4.12	8/16/29	0.00	0.00
8/29/29	0.22*	3.71	8/29/29	94.45	9.95
3/12/30	0.00	0.70*	3/12/30	100.00	83.00

TABLE XII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

	Assay Results.			*Loss of Ethyl Nitrite in Per Cent.*			
	Refrigerator.[1]	Direct Sunlight.[2]			Refrigerator.[1]	Direct Sunlight.[2]	
Date, 1930.	White glass, per cent.	White glass, per cent.	Amber glass, per cent.	Date, 1930.	White glass, per cent.	White glass, per cent.	Amber glass, per cent.
3/17	4.18	4.18	4.18	3/17	0.00	0.00	0.00
3/22	4.17	2.56*	4.03	3/22	0.24	37.48	3.59
3/29	4.10	0.88	3.98	3/29	1.92	77.95	4.79
4/5	4.08	0.08	3.97	4/5	2.39	98.25	5.04
4/18	3.95	0.00	3.76	4/18	5.50	100.00	10.05

TABLE XIII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 1% GLYCERIN.

	Assay Results.			*Loss of Ethyl Nitrite in Per Cent.*			
	Refrigerator.[1]	Direct Sunlight.[2]			Refrigerator.[1]	Direct Sunlight.[2]	
Date, 1930.	White glass, per cent.	White glass, per cent.	Amber glass, per cent.	Date, 1930.	White glass, per cent.	White glass, per cent.	Amber glass, per cent.
3/30	4.23	4.23	4.23	3/30	0.00	0.00	0.00
3/24	4.09	3.11*	4.19	3/24	3.31	26.49	0.95
3/29	4.04	0.74	4.18	3/29	4.50	82.50	1.16
4/5	3.92	0.08	4.08	4/5	7.34	98.1	3.56
4/18	3.86	0.00	3.78	4/18	8.75	100.00	10.65

TABLE XIV.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 1% CASTOR OIL.

Assay Results.

Date, 1930.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.
3/17	4.40	4.40	4.40
3/22	4.38	3.14*	4.36
3/29	4.34	1.86	4.34
4/5	4.28	0.13	4.30
4/18	4.13	0.00	4.27

Loss of Ethyl Nitrite in Per Cent.

Date, 1930.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.
3/17	0.00	0.00	0.00
3/22	0.45	28.61	0.91
3/29	1.37	57.75	1.37
4/5	2.72	97.10	2.28
4/18	6.15	100.00	2.96

TABLE XV.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

Assay Results.

Date.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.	Diffused Sunlight.[3] White glass, per cent.	Diffused Sunlight.[3] Amber glass, per cent.
7/3/30	4.23	4.23	4.23	4.23	4.23
7/7/30	3.93	1.04*	4.04	3.92	3.95
7/10/30	3.90	0.07	3.85	3.91	3.91
7/16/30	3.87	0.00	3.80	3.90	3.90
8/9/30	3.83	...	3.76	3.77	3.78
9/18/30	3.57	...	3.18*	3.58	3.59
12/5/30	3.37*	...	3.05	3.08*	3.30*
2/13/31	3.22	...	2.85	2.83	3.10
3/13/31	3.12	...	2.69	2.59	2.84

Loss of Ethyl Nitrite in Per Cent.

7/3/30	0.00	0.00	0.00	0.00	0.00
7/16/30	8.51	100.00	10.18	7.81	7.81
3/13/31	26.12	...	36.19	38.68	32.84

TABLE XVI.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 0.1% ROCHELLE SALT.

Assay Results.

Date.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.	Diffused Sunlight.[3] White glass, per cent.	Diffused Sunlight.[3] Amber glass, per cent.
7/3/30	4.23	4.23	4.23	4.23	4.23
7/7/30	4.02	0.43*	3.94	3.94	4.00
7/10/30	4.02	0.09	3.90	3.94	3.86
7/16/30	3.97	0.00	3.88	3.92	3.83
8/9/30	3.92	...	3.78	3.81	3.82
9/19/30	3.63	...	3.35*	3.58	3.46*,[4]
12/5/30	3.60	...	3.03	3.37*	3.14
2/13/31	3.46*	...	2.64	2.49	2.88[4]
3/13/31	3.30	...	2.32	2.31	2.79

Loss of Ethyl Nitrite in Per Cent.

7/3/30	0.00	0.00	0.00	0.00	0.00
7/16/30	6.16	100.00	8.28	7.34	9.45
3/13/31	22.00	...	45.20	45.45	34.10

TABLE XVII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 0.1% OF DISODIUM PHOSPHATE.

Assay Results.

Date.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.	Diffused Sunlight.[3] White glass, per cent.	Diffused Sunlight.[3] Amber glass, per cent.
7/3/30	4.23	4.23	4.23	4.23	4.23
7/7/30	4.15	0.23*	4.13	4.13	4.09

7/10/30	4.08	0.10	3.84	3.97	3.98
7/16/30	4.01	0.00	3.83	3.94	3.88
8/9/30	3.82	...	3.57	3.92	3.86
9/19/30	3.73	...	3.22*	3.78	3.65
12/5/30	3.48*	...	2.73	3.35*	3.41*
2/13/31	3.32	...	2.46	3.02	3.28
3/13/31	3.29	...	2.24	2.70	2.92
		Loss of Ethyl Nitrite in Per Cent.			
7/3/30	0.00	0.00	0.00	0.00	0.00
7/16/30	5.21	100.00	9.46	6.86	8.28
3/13/31	22.11	...	47.15	36.20	31.00

TABLE XVIII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 0.1% OF POTASSIUM CARBONATE.

Assay Results.

Date.	Refrigerator.[1] White glass, per cent.	Direct Sunlight.[2] White glass, per cent.	Direct Sunlight.[2] Amber glass, per cent.	Diffused Sunlight.[3] White glass, per cent.	Diffused Sunlight.[3] Amber glass, per cent.
7/3/30	4.23	4.23	4.23	4.23	4.23
7/7/30	4.03	0.23*	4.00	4.09	3.96
7/10/30	4.03	0.03	4.00	3.99	3.87
7/16/30	3.84	0.00	3.90	3.87	3.84
8/9/30	3.79	...	3.62	3.85	3.67
9/19/30	3.73	...	3.47*	3.68	3.65
12/5/30	3.63	...	3.15	3.40*	3.37*
2/13/31	3.46	...	2.72	3.19	3.17
3/13/31	3.31	...	2.68	2.46	2.87
		Loss of Ethyl Nitrite in Per Cent.			
7/3/30	0.00	0.00	0.00	0.00	0.00
7/16/30	9.22	100.00	7.81	8.51	9.24
3/13/31	28.80	...	36.62	41.78	32.09

TABLE XIX.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

Date, 1931.	Per Cent.	Diffused Sunlight Amber Glass.[3] Percentage loss.
2/28	4.17	0.00
3/7	4.11	1.44
3/23	4.05	2.88
4/25	3.89	6.72

TABLE XX.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%) WITH 0.5 PER CENT OF SAPONIN.

Date, 1931.	Per Cent.	Diffused Sunlight Amber Glass.[3] Percentage loss.
2/28	4.17	0.00
3/7	4.07	2.39
3/23	4.04	3.11
4/25	3.81	8.62

The results obtained in the first series of experiments, shown in Tables IX, X and XI, indicate that 1 per cent of added sodium bicarbonate or magnesium carbonate fail to retard the rate of decomposition of the ethyl nitrite when the spirit is kept in direct sunlight. Likewise, in the second series of experiments, on comparing the results of Tables XII, XIII and XIV, it appears that glycerin exerts little preservative action, but castor oil on the other hand retards decomposition somewhat over a prolonged period of storage. The principal disadvantage of

castor oil is that it is immiscible with practically all the preparations that are ordinarily prescribed with the spirit. Furthermore, the solution becomes cloudy when stored in a cold place. The results obtained in the third series of tests as shown in Tables XV, XVI, XVII and XVIII, were also negative in so far as preservative effect is concerned.

From the results of the comparatively few assays made in the last series of experiments as shown in Tables XIX and XX, it appears that saponin has no preservative action, and that its presence may even accelerate deterioration.

COMPARISON OF ASSAY METHODS.

In order to follow accurately the rate of deterioration of the spirit of ethyl nitrite it is essential that an assay method be used which can be relied upon. Several methods of assay are in more or less general use to-day. These methods are either of the gasometric type in which the nitric oxide gas is liberated by an oxidizing agent and measured as such, or of the volumetric type in which the reducing power of the ethyl nitrite is measured. The first type is exemplified by the method given in the United States Pharmacopœia (10), which is as follows:

The Method of the United States Pharmacopœia.—"Transfer about 40 cc. of Spirit of Ethyl Nitrite, which has been previously shaken with 0.5 Gm. of powdered potassium bicarbonate, to a tared, 100-cc. measuring flask, and weigh accurately. Add sufficient alcohol to bring the volume to exactly 100 cc., and mix thoroughly. Introduce into a nitrometer, filled with a saturated aqueous solution of sodium chloride, exactly 10 cc. of the alcoholic solution, follow by 10 cc. of potassium iodide T. S. and afterwards by 5 cc. of diluted sulphuric acid. When the volume of gas has become constant (within thirty to sixty minutes), note the volume of gas collected. Multiply this volume in cc. by 0.307, and divide the product by one-tenth of the weight of the Spirit of Ethyl Nitrite taken. At standard temperature and pressure, the quotient represents the percentage of ethyl nitrite in the liquid. The temperature correction is $^1/_{273}$ of the total percentage just found for each degree of temperature, added if the temperature is below, subtracted if above 25° C. The barometric correction is $^1/_{760}$ of the total percentage just found for each mm., added if above, subtracted if below, 760 mm."

A good example of the volumetric type is the following which is a translation of the method of the Netherlands Pharmacopœia (11).

The Method of the Netherlands Pharmacopœia.—Mix 10 cc. of spirit of ethyl nitrite with 15 cc. of a solution of potassium chlorate in water (1:20), and 5 cc. of nitric acid in a closed flask and let stand for 1 hour with occasional shaking. Add 20 cc. of $N/10$ silver nitrate volumetric solution and 10 drops of ferric ammonium sulphate test solution, and titrate the excess of silver nitrate volumetric solution and 10 drops of ferric ammonium sulphate test solution, and titrate the excess of silver nitrate with $N/10$ potassium thiocyanate solution until the red color no longer disappears on shaking. Not less than 8.9 cc. nor more than 11.2 cc. of silver nitrate solution should be consumed. Each cc. of $N/10$ silver nitrate solution corresponds to 22.5 mg. of $C_2H_5NO_2$.

The method of the United States Pharmacopœia given above is not wholly satisfactory, especially when it is desired to compare results obtained by different analysts. The conditions which are most unsatisfactory are the permissibility

to use a nitrometer of only 50 cc. capacity, and the directions to use saturated salt solution for filling the nitrometer and leveling tube.

Experience has demonstrated that if the sample contains over 4% of ethyl nitrite a nitrometer having a capacity of 50 cc. is too small as some of the liberated nitric oxide gas will escape through the equilibrium tube in spite of most careful handling. It is possible that this loss of gas might be avoided by the use of a nitrometer with a globular expansion near the lower end, but nitrometers of this type do not appear to be on the market. A nitrometer having a capacity of not less than 100 cc. should, therefore, be specified.

Our experience has also shown that the use of saturated solution of sodium chloride as the liquid for filling the nitrometer and leveling tube is responsible for low results due primarily to the diffusion of the nitric oxide gas through the liquid and subsequent escape at the open end of the leveling tube. This is especially true when the salt solution is not thoroughly saturated. There is also some great danger of some escape of gas when the tubes are shaken to mix the reagents. Still another cause of error when salt solution is used is the air bubbles which form and remain unnoticed in the rubber tubing connecting the nitrometer and leveling tube.

In view of these conditions, it is suggested that if the United States Pharmacopœial method of assay is employed it be modified as follows: Use a nitrometer of not less than 100 cc. capacity and replace the saturated salt solution with mercury. Shake the tube containing the reacting mixture until the latter becomes colorless, thus insuring complete oxidation of the ethyl nitrite.

The method of the Netherlands Pharmacopœia is also unsatisfactory because there is a considerable loss of ethyl nitrite through evaporation when the spirit is weighed by itself, and because the end-point of the titration is too indefinite where titration is carried on in the presence of silver chloride. This method is more rapid than that of the United States Pharmacopœia and gives more constant results in the hands of different analysts if modified as follows:

Modification of the Netherlands Pharmacopœia Method.—Mix 15 cc. of a solution of potassium chlorate in water (1:20) and 5 cc. of nitric acid (U. S. P.) in a 100-cc. glass-stoppered, volumetric flask and weigh the flask and its contents. Add 10 cc. of spirit of ethyl nitrite from a pipette, stopper the flask, shake and reweigh to ascertain the weight of the spirit added. Set the mixture aside in a moderately warm place for 1 hour and shake occasionally. Add 20 cc. of $N/10$ silver nitrate solution, shake well and fill the flask with distilled water up to the 100-cc. mark. Filter the mixture through a dry filter into a 100-cc. graduated cylinder, rejecting the first 20 cc. of filtrate. Measure off exactly 50 cc. of the remainder by means of a pipette, add 10 drops of ferric ammonium sulphate test solution and titrate the excess of silver nitrate with $N/10$ potassium thiocyanate solution. Each cc. of $N/10$ silver nitrate solution consumed corresponds to 0.0225 Gm. of $C_2H_5NO_2$.

The following tables give comparative data showing the results obtained in the assay of portions of the same sample of spirit by the method of the United States Pharmacopœia, a modification of that method, and in the method of the Netherlands Pharmacopœia.

TABLE XXI.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

	Gasometric Assay (U. S. P. Method). Using sat. NaCl sol., per cent.	Gasometric Assay (U. S. P. Method). Using mercury, per cent.	Volumetric Assay (N. P. Method). Per cent.
1	3.78*	3.97	3.51
2	3.84	3.97	3.53

* Slight diffusion took place with a loss of gas.

All of the above assays were run Feb. 23, 1931, the spirit in each case being taken from the same bottle.

TABLE XXII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

	Gasometric Assay (U. S. P. Method). Using sat. NaCl sol., per cent.	Gasometric Assay (U. S. P. Method). Using mercury, per cent.	Volumetric Assay (N. P. Method). Per cent.		Gasometric Assay (U. S. P. Method). Using sat. NaCl sol., per cent.	Gasometric Assay (U. S. P. Method). Using mercury, per cent.	Volumetric Assay (N. P. Method). Per cent.
1	4.26*	4.55	4.08	4	4.21	..	4.08
2	4.31*	4.55	4.06	5	3.92*	..	..
3	4.26*	4.54	4.08	6	4.53	..	..

* Diffusion took place with a loss of gas.

All of the above assays were run Feb. 28, 1931, the spirit in each case being taken from the same bottle.

The foregoing data show that the method of the Netherlands Pharmacopœia gives lower results than the original method of the United States Pharmacopœia or its modification. This condition was found to be due entirely to titration of excess of silver nitrate in the presence of silver chloride. If the silver chloride is removed from the reacting mixture by filtration previous to titration, the results obtained are almost identical or but very slightly higher than those obtained by using the modified United States Pharmacopœia method which is shown by the following table.

TABLE XXIII.—SOLUTION OF ETHYL NITRITE IN ETHYL ALCOHOL (95%).

	Gasometric Assay (U. S. P. Method). Using sat. NaCl sol., per cent.	Gasometric Assay (U. S. P. Method). Using mercury, per cent.	Volumetric Assay (Modified N. P. Method). Per cent.		Gasometric Assay (U. S. P. Method). Using sat. NaCl sol., per cent.	Gasometric Assay (U. S. P. Method). Using mercury, per cent.	Volumetric Assay (Modified N. P. Method). Per cent.
1	4.20	4.22	4.28	4	4.11	4.20	4.29
2	3.64	4.24	4.31	5	4.14	4.21	4.31
3	3.77	4.20	4.29	6	4.16	4.22	4.26

All of the above assays were run April 29, 1931, the spirit in each case being taken from the same bottle.

As previously stated, the modified method of the Netherlands Pharmacopœia gives results which are slightly higher than those obtained by the U. S. P. method of assay. If a correction is made for vapor pressure in the U. S. P. method, the difference is still greater than indicated in the preceding tables.

Inasmuch as the foregoing assays by the modified method of the Netherlands Pharmacopœia were carried out on unneutralized samples of the spirit, it was thought that this condition might be responsible in a measure for the comparatively high results obtained. For this reason a series of assays was run on neutralized samples. The results of these assays, which are given in the following table, show, however, that neutralization of the mixture previous to titration with potassium thiocyanate has practically no effect in so far as the final result is concerned.

TABLE XXIV.—EFFECT OF NEUTRALIZATION WITH POTASSIUM BICARBONATE ON ASSAY RESULTS.

Date.	Gasometric Assay (U. S. P. Method). Using sat. NaCl sol. Plain, per cent.	Using sat. NaCl sol. Neutralized, per cent.	Using mercury. Plain, per cent.	Using mercury. Neutralized, per cent.	Volumetric Assay (Modified N. P. Method). Plain, per cent.	Neutralized, per cent.
7/7/31	3.95	3.94	4.02	3.96	4.12	4.04
	3.90	3.94	4.01	3.96	4.09	4.08
7/14/31	3.75	3.69	3.88	3.86	3.92	3.89
	3.84	3.81	3.88	3.84	4.00	4.00

The Spirit of Ethyl Nitrite used in these assays was prepared February 10, 1931.

CONCLUSIONS.

From the results obtained in the experiments described above, the following conclusions are drawn:

1. The spirit will deteriorate in strength under any conditions of preparation or storage which have been devised to date.

2. The best solvent to use in its preparation is 99% ethyl alcohol.

3. The addition to the finished product of any of the substances which have been suggested for the prevention or retardation of deterioration is worthless.

4. In the light of our experience the spirit can best be preserved in small, tightly stoppered glass bottles kept in a refrigerator. In fact, the containers should be so small that it will not be necessary to open them more than once, as frequent opening of the container is found to be responsible for a very considerable loss in ethyl nitrite due to evaporation.

5. If the spirit is not kept in a refrigerator, it can best be preserved by storing it in small, tightly stoppered amber bottles.

6. It is recommended that the method of the Netherlands Pharmacopœia as modified above be adopted as the official method of assay for the spirit.

7. In the event that the gasometric assay is retained it is recommended mercury be used in place of saturated sodium chloride solution.

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(3) *Ibid.*, 5th Edition, Vol. 1, page 311.

(4) United States Pharmacopœia, ninth decennial revision, page 403.

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(9) "Merck's Index," Fourth Edition, page 451.

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(11) Nederlandsche Pharmacopee, 5° Uitgare, page 308.

PHARMACY WEEK—OCTOBER 10th–15th—.

Its success depends in a large measure on the efforts of Retail Pharmacists; it presents an opportunity for the pharmacist and pharmacy.

THE BACTERICIDAL EFFICIENCY OF IODINE SOLUTIONS.*

BY LOUIS GERSHENFELD† AND RUTH E. MILLER.§

INTRODUCTION.

The antiseptic action of iodine was discovered by Davaine in 1873. Perhaps the earliest reference to the antiseptic use of iodine in surgery is to be found in the fourth edition of "The Practice of Surgery" by T. Bryant, published in 1884. He recommends an antiseptic lotion for wound irrigation which is made by adding 10 drops of Liquor Iodi to the ounce of water. Willard in his "Annals of Surgery," published in 1896, Nicholas Senn in his "Surgery, Gynecology and Obstetrics," published in 1905, and several other prominent surgeons refer to iodine as the safest and most potent of all antiseptics. As a disinfectant for the skin, particularly for the treatment of injuries and for the field of operation, iodine came prominently to the attention of every one during the year 1905. Considerable discussion has resulted in an attempt to definitely determine who introduced iodine for this purpose. Among the claimants for the honor are to be found Cannaday, Woodbury, Dannreuther and Grossich. The latter is credited by many workers as having been the first one to write comprehensively on the subject and his article, in "Zentralblatt für Chirurgie," No. 44, page 1289, Oct. 31, 1908, is frequently quoted by later writers.

As a local application for the purpose of destroying microörganisms present on the applied area, iodine has been and is being constantly employed by surgeons throughout the world as one of the safest of skin disinfectants. Free iodine (and in some instances iodine vapor and nascent iodine) has been and is being employed as a bactericidal agent for the treatment of skin affections, in obstetrics and gynecology, in general surgery as a wound wash, as a vaginal douche, as a mouth wash, for the disinfection of small quantities of water and even in general disinfection where this chemical will not be inactivated or attack the material to be treated.

More recently and especially since the beginning of the Great World War numerous antiseptics and bactericidal agents have been introduced, each bearing claims as the nearest approach to the ideal germicide. Reports by different workers have revealed wide variations in the bactericidal efficiency of these different chemicals. With the thought of determining the disinfecting qualities of iodine, its limitations, its value as compared to other antiseptics and bactericidal agents frequently advocated, an extensive program of research was inaugurated. Herewith are recorded the data completed to date. The germicidal agents used for comparison were of the concentrations commonly marketed or recommended for use.

DETERMINATION OF PHENOL COEFFICIENT AGAINST B. TYPHOSUS.

The Hopkins strain of *B. typhosus* was used as the test organism in these experiments. Three additional cultures of *B. typhosus* were obtained from laboratories employing this as their test organism (typhoid bacillus) in performing the phenol coefficient technique. The Reddish method, as published in the issue of April 1927, of the *American Journal of Public Health*, was employed using these

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four cultures of *B. typhosus* separately. Check determinations were made in each case so that in all eight phenol coefficient tests were performed on each sample. The phenol coefficient recorded for each preparation in Table I is the average of the findings in these eight tests.

Controls on the solvents revealed the following: Dilute alcohol kills cultures of *Staphylococcus aureus* and typhoid bacillus within 5 minutes when mixed in the proportion of 5 cc. of chemical to 0.5 cc. of culture (the same proportion as employed in the Reddish method). Dilute alcohol, mixed with equal parts of water, does not kill these organisms within 15 minutes when employed in the same proportion.

Alcohol–acetone–water (undiluted) employed as a solvent for E2[1] kills cultures

A. Proprietary compound cresol solution.
B. Proprietary stabilized sodium hypochlorite solution.
C. Proprietary cresylic acid solution.
D. Proprietary organic mercurial solution, 1:500.
E1. Proprietary organic mercurial, 2% aqueous solution unless otherwise designated.
E2. Proprietary organic mercurial, 2% solution in 10% acetone, 55% alcohol, water q. s. 100%.
F. Proprietary polyphenol derivative, 1:1000 solution.

of *Staphylococcus aureus* and typhoid bacillus within 5 minutes, but, if diluted with an equal quantity of water, it will not kill these organisms within 15 minutes, when 5 cc. of the solvent is mixed with 0.5 cc. of the respective cultures.

The aqueous solution of iodides employed as a solvent for the iodine in the 3% special aqueous solution of iodine (Karns' Formula[2]), THIS JOURNAL, 21, 785 when

Iodine	3.00 Gm.
Calcium iodide hexahydrate	0.132 Gm.
Potassium iodide	0.144 Gm.
Sodium iodide	3.312 Gm.
Water, q. s.	100.00 cc.

undiluted does not kill either *Staphylococcus aureus* or the typhoid bacillus within 15 minutes.

TABLE I.—PHENOL COEFFICIENT TEST.

(Reddish Technique.)

B. typhosus (as the test organism—temperature at 20° C.)

	Phenol Coefficient.	Variations in Coefficient.
1. 2% Alcoholic Iodine Solution (with dilute alcohol)	4.7	4.1 5.2
2. 3% Alcoholic Iodine Solution (with dilute alcohol)	6.6	5.5 7.5
3. 2% Alcoholic Iodine Solution (U. S. P. tincture diluted with alcohol)	3.6	3.2 4.1
4. 3% Alcoholic Iodine Solution (U. S. P. tincture diluted with alcohol)	5.8	5.3 6.1
5. 2% Isotonic Iodine Solution	4.7	4.4 5.5
6. 3% Special Aqueous Iodine Solution (Karns' Formula)	7.2	6.5 7.5

[1] The proprietary germicidal agents used in this investigation are as follows.

[2] Iodine Solution, Karns, has the following composition.

7.	A	2.7	
8.	B	1.8	1.6
			2.1
9.	C	9.3	
10.	Mercuric chloride (1–1000)	2	
11.	D	1.1	
12.	E1	0.16	
13.	E2	0.16	
14.	F	0.055	

The phenol coefficients as recorded in Table I, are for the solutions as they are marketed or as mentioned therein. Thus the coefficients for A, B, C, D and F, are for the solutions as they are marketed. Solutions of E were all prepared freshly from the commercial powder (original sample). The phenol coefficients for the iodine solutions are for those solutions, the strengths and methods of preparation of which are given. The 2% isotonic iodine solution contains 20 Gm. of iodine, 24 Gm. of potassium iodide and dilute alcohol, a quantity sufficient to make 1000 cc.

It is to be noted that in obtaining the phenol coefficient of the solutions mentioned (average of eight determinations), variations were observed only in the iodine solutions and B. The other disinfectants tested and the phenol employed yielded practically the same results on each of the eight examinations. In the case of B, the variations were from 1.6 to 2.1. The variations of the iodine solutions were:

No. 1—from 4.1 to 5.2
No. 2—from 5.5 to 7.5
No. 3—from 3.2 to 4.1
No. 4—from 5.3 to 6.1
No. 5—from 4.4 to 5.5
No. 6—from 6.5 to 7.5

This variation in results with the iodine solutions is apparent not only with the different strains of typhoid bacilli but may occur with the same strain of organism (but grown in two different tubes of media and these employed separately in the test). For instance, it was noted that if to each of 0.5 cc. of several cultures of organisms, the same dilution of iodine is added and these kept under identical conditions, there will be a variation in the length of time required for the disappearance of free iodine. This was determined not only by the disappearance of color from the solutions but by bringing loopfuls of the latter in contact with starch indicator.

TABLE II.—PHENOL COEFFICIENT TEST.

(Reddish Technique.)

Staphylococcus aureus (as the test organism—temperatures at 20° C. and 37° C.)

	At 20° C.	At 37° C.
3% Special Aqueous Iodine Solution (Karns' Formula)	7.5	5.6
3% Alcoholic Iodine (with dilute alcohol)	6.3	5.1
E1	0.013	0.011
E2	0.024	0.037

The disappearance of free iodine, in these solutions, seems to depend upon the amount of organic substances and in particular upon the quantity of protein matter present. This probably accounts for the variable end results displayed by iodine in bactericidal efficiency tests. It is probable that the iodine reacts with protein matter producing a compound which in itself displays bactericidal efficiency. Of course, we are also to take into consideration the fact that some of these iodine solu-

tions may reveal slight losses in strength, depending upon the methods employed in keeping them, resulting in the same solution yielding a lower phenol coefficient at a later date. But with these variations due to whatever cause, even if we take the low points and not the average, we find that the iodine solutions are decidedly more efficient as bactericidal agents in their recommended formulas than the other substances tested.

It is to be noted that the iodine solutions do not reveal a marked decrease in bactericidal efficiency for the *Staphylococcus aureus* at 20° C. as compared with the typhoid bacillus at the same temperature. An attempt was made to determine the reason for this. Unless this chemical displays specificity, it is to be expected that it would not be as effective against the staphylococcus as it would be against the typhoid bacillus, the latter an organism much weaker in resistance. In the standard methods as advocated in the Reddish technique which were carried out, it was found that the cultures of staphylococci when ready for the test contained 100,000,000 less organisms per cc. than were present in the cultures of typhoid bacilli employed in the test. This means less organic and protein matter with a corresponding increase in the prolonged action of free iodine.

It is also to be noted that in the case of the iodine solutions, there is a decrease in the bactericidal efficiency at 37° C. as compared with results obtained at 20° C. Titrations made of weak iodine solutions at 5-, 10- and 15-minute intervals while kept at 20° C. and 37° C., revealed a loss of free iodine at the higher temperature and an almost negligible loss at 20° C. Such losses are not as marked with concentrated iodine solutions.

The phenol coefficients with *Staphylococcus aureus* at 37° C. as given in this table were obtained by comparing the unknowns with phenol at 37° C. This will give a coefficient less than that obtainable if the comparison is made with phenol at 20° C., a practice employed by some workers. We found that a 1:80 phenol kills *Staphylococcus aureus* in 10 minutes but not in 5 and 1:90 does not kill in 15 minutes at 37° C. whereas 1:60 phenol will kill in 10 minutes but not in 5 and 1:70 will not kill in 15 minutes at 20° C. Take for instance the 3% Aqueous Special Iodine Solution (Karns' Formula): A 1:450 dilution kills *Staphylococcus aureus* at 20° C. and also at 37° C. within 10 minutes but not within 5 minutes. If we compare this dilution with the 1:80 phenol dilution at 37° C., the resulting coefficient will be as recorded, 5.6. If our comparison should be made with the standard resistance of *Staphylococcus aureus* at 20° C., even though the actual work with this organism was performed at 37° C., a practice established by some workers, the phenol coefficient will be $\frac{450}{60}$ or 7.5. In like manner the phenol coefficients (*Staphylococcus aureus*) at 37° C. of the solutions mentioned in Table II will be as follows if comparisons were made with the standard resistance to phenol at 20° C. instead of at 37° C.:

3% Alcoholic Iodine (with dilute alcohol).	Average.
	6.8
E1	0.013
E2	0.05

MODIFIED BACTERICIDAL EFFICIENCY TESTS.

The phenol coefficient methods are used as a means of comparing the efficiency of different disinfectants against the same organism under identical test conditions.

There are several objections, however, to certain features of the phenol coefficient techniques. At times one may find that the coefficient obtained, though consistent with the maximum of accuracy possible in a laboratory test, may not be comparable to the actual results in practice, as here conditions may be entirely different from that possible in a laboratory test. Experiments were therefore conducted employing more rigid laboratory methods. The latter, having the advantage of more closely simulating actual conditions found in practical disinfection, may serve as a more satisfactory means of determining the practical value of various disinfectants as bactericidal agents.

Transplant tubes held ten cc. of sterile bouillon (containing 1% peptone, 0.5% salt, 0.5% beef extract and possessing a p_H of 6.6).

The inoculating loop employed was 4 mm. in diameter.

The test organisms were *B. typhosus* and *Staphylococcus aureus* and in each case four separate cultures were employed, the latter being the strains of these organisms used for phenol coefficient and other bactericidal efficiency tests by different workers. Stock cultures of these organisms transplanted once a month were kept on beef extract agar slants at room temperature. The cultures used in the test were unfiltered 24-hour old bouillon growths obtainable after transplanting on 5 successive days and employing a standard loopful of the previous 24-hour growth for inoculation. These cultures were capable of resisting dilutions of phenol as given in the Reddish method.

The following Alcoholic Iodine Solutions were tested:

	% Iodine.	% KI.	% Alcohol.
I	1	0.65	64
II	2	1.32	64
III	4	2.70	64
IV	6	4.00	64
V	A 3% Special Aqueous Iodine Solution (Karns' Formula)		
VI	1%, 2%, 4% and 6% Aqueous Iodine Solutions (containing twice as much potassium iodide as iodine) were also tested		

Technique:

Equal quantities (5 cc.) of these alcoholic and aqueous solutions of iodine were mixed separately with (5 cc. of) the unfiltered 24-hour old culture of *B. typhosus* and *Staphylococcus aureus*. Transplants with a standard loop were made every two minutes for the first ten minutes and every ten minutes thereafter until one hour had elapsed. These subculture tubes were incubated at 37° C. for 48 hours and the results were read. The tests were repeated with each of the four strains of these two organisms and a check test performed with each strain. In all 8 tests each were conducted with *B. typhosus* and *Staphylococcus aureus* as the test organisms. In every instance these bacteria were killed by the iodine solutions within two minutes.

To be assured that during transplanting an amount of iodine was not being carried over which might exert a bacteriostatic action, $^1/_{10}$ cc. and 1 cc. of the subculture tubes showing no growth were transplanted into 10 cc. of bouillon. No growth was obtained. To further verify the fact that no bacteriostatic action was exerted, several 10-cc. tubes of bouillon were each inoculated with a loopful of organisms, and immediately a loopful of the various iodine solutions was added.

These tubes showed growth after incubation at 37° C. for 24 hours, thus revealing that the amount of iodine carried over is not bacteriostatic.

In the case of the 3% Special Aqueous Iodine Solution (Karns' Formula) 5 cc. of a 1:20 dilution of this solution were effective in killing within two minutes the organisms present in 5 cc. of a 24-hour old broth culture of *B. typhosus*, and a similar effect was observed when mixed in the same proportions with a 24-hour old culture of *Staphylococcus aureus*.

These tests were repeated employing 1 cc. of each of the iodine solutions and 3 cc. of the 24-hour old unfiltered broth culture of *B. typhosus*, and again with 3 cc. of the culture of *Staphylococcus aureus*. At the designated intervals as previously mentioned, transplants were made. The findings made after reading the transplants which were incubated for 48 hours at 37° C. revealed that all of the solutions killed the organisms within two minutes.

ANOTHER METHOD AND COMPARATIVE RESULTS WITH OTHER ANTISEPTICS.

A representative group of antiseptics was selected including phenol and chemicals representing the coal-tar disinfectants, the mercurials, sodium hypochlorite, etc. The solutions of iodine employed in this test were:

	Iodine.	KI.	Dilute Alcohol.	% Free I.
1.	20 Gm.	24 Gm.	qs. 1000 cc.	2%
2.	30 Gm.	36 Gm.	qs. 1000 cc.	3%

3. Tincture of Iodine, U. S. P. diluted with 95% Alcohol to a 2% titratable free iodine solution
4. Same as C except that the titratable free iodine was 3%
5. 3% Special Aqueous Iodine (Karns' Formula).

The technique employed was the same as mentioned in the previous test with the exception that one cc. of the antiseptic solution or a dilution of the latter was added to 5 cc. of the 24-hour old unfiltered culture of the respective test organisms. Transplants were made after 1, 3, 5, 10, 15, 30, 45 and 60 minutes. This proportion of culture to antiseptic is more rigid than one finds under practical conditions, there being present not only a large quantity of organic matter but an exceedingly large number of organisms. In fact, a laboratory test as performed here exaggerates the exact conditions found in practice so that antiseptics showing favorable results in a procedure as outlined will be found, in most instances, to be efficacious, when used in practice. The same four different strains of the *B. typhosus* and *Staphylococcus aureus* were employed separately. A check test was performed each time so that eight separate tests were made with each dilution on each of the two organisms (*B. typhosus* and *Staphylococcus aureus*). 1, 4, 5, 9, 14 and 19 in the table refer to the parts of sterile water added. Table III gives the results obtained.

TABLE III.

(*B. typhosus*.)

	Solution.	Strength.	(At 20° C.) 1.	3.	5.	10.	15.	30.	45.	60 Minutes.
1.	Iodine in dilute alcohol	2%	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 1)	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 4)	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 9)	+	+	+	+	+	+	+	+
2.	Iodine in dilute alcohol	3% (1 + 9)	−	−	−	−	−	−	−	−

	Iodine	3% (1 + 14)	−	−	−	−	−	−	−	−
	Iodine	3% (1 + 19)	+	+	+	+	+	+	+	+
3.	Tincture of Iodine U. S. P. diluted with 95% alcohol to	2% (1 + 9)	+	+	+	+	+	+	+	+
4.	Tincture of Iodine U. S. P. diluted with 95% alcohol to	3% (1 + 9)	+	+	+	+	+	+	+	+
5.	Iodine (Special Aqueous Karns' Formula)	3%	−	−	−	−	−	−	−	−
	Iodine (Special Aqueous Karns' Formula)	3% (1 + 14)	−	−	−	−	−	−	−	−
	Iodine (Special Aqueous Karns' Formula)	3% (1 + 19)	+	+	+	+	+	+	+	+
	E1	2% (in dil. alcohol)	+	+	+	+	+	−	−	−
	E1	3% (aqueous)	+	+	+	+	−	−	−	−
	E1	4% (aqueous)	+	+	+	−	−	−	−	−
	E1	5% (aqueous)	+	+	−	−	−	−	−	−
	E2		−	−	−	−	−	−	−	−
	Bichloride of Mercury	1–1000	−	−	−	−	−	−	−	−
	D	1 + 1 or (1:1000)	+	+	−	−	−	−	−	−
	B	Undiluted	−	−	−	−	−	−	−	−
	B	1 + 1	−	−	−	−	−	−	−	−
	B	1 + 4	+	+	+	+	−	−	−	−
	B	1 + 5	+	+	+	+	+	−	−	−
	Phenol	2% (aqueous)	+	+	+	+	+	+	+	+
	Phenol	5% (aqueous)	+	−	−	−	−	−	−	−
	A	1%	+	+	+	+	+	+	+	+
	A	2%	+	+	+	+	−	−	−	−
	A	3%	−	−	−	−	−	−	−	−
	C	0.5%	+	+	+	+	+	+	+	+
	C	1%	+	−	−	−	−	−	−	−
	F	Undiluted	+	+	+	+	+	+	+	+
	Liquor Cresolis Comp.	1%	+	+	+	+	+	+	+	+

Staphylococcus aureus.

	Solution.	Strength.	(At 20° C.) 1.	3.	5.	10.	15.	30.	45.	60 Minutes.
1.	Iodine in dilute alcohol	2%	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 1)	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 4)	−	−	−	−	−	−	−	−
	Iodine	2% (1 + 9)	+	+	+	+	+	+	+	+
2.	Iodine in dilute alcohol	3% (1 + 9)	−	−	−	−	−	−	−	−
	Iodine in dilute alcohol	3% (1 + 14)	−	−	−	−	−	−	−	−
	Iodine in dilute alcohol	3% (1 + 19)	+	+	+	+	+	+	+	+
3.	Tincture of Iodine U. S. P. diluted with 95% alcohol to	2% (1 + 9)	+	+	+	+	+	+	+	+
4.	Tincture of Iodine U. S. P. diluted with 95% alcohol to	3% (1 + 9)	+	+	+	+	+	+	+	+
5.	Special Aqueous Iodine (Karns' Formula)	3% (1 + 14)	−	−	−	−	−	−	−	−
	Special Aqueous Iodine (Karns' Formula)	3% (1 + 19)	+	+	+	+	+	+	+	+
	E1	2% in dil. alcohol	+	+	+	+	+	+	+	+

E1	3% aqueous	+	+	+	+	+	+	+	+
E1	4% aqueous	+	+	+	+	+	+	+	+
E1	5% aqueous	+	+	+	+	+	+	+	+
E2		+	+	+	+	+	+	+	+
Bichloride of Mercury	1-1000	+	+	+	+	+	+	+	+
D	1 + 1 or (1:1000)	+	+	+	+	+	+	−	−
B	Undiluted	−	−	−	−	−	−	−	−
B	1 + 1	−	−	−	−	−	−	−	−
B	1 + 4	+	+	+	+	−	−	−	−
B	1 + 5	+	+	+	+	+	+	+	+
Phenol	2% (aqueous)	+	+	+	+	+	+	+	+
Phenol	5% (aqueous)	+	+	+	+	+	+	+	−
A	1%	+	+	+	+	+	+	+	+
A	2%	+	+	+	+	+	+	+	−
A	3%	+	+	+	−	−	−	−	−
C	0.5%	+	+	+	+	+	+	+	+
C	1.0%	+	+	+	+	+	+	+	+
F	Undiluted	+	+	+	+	−	−	−	−
Liquor Cresolis Comp.	1%	+	+	+	+	+	+	+	+

REDDISH METHOD WITHOUT ORGANIC MATTER.

Tests were conducted employing the Reddish method as used in determining the phenol coefficient, but the following variations were made: Five-tenths cc. of the 24-hour old culture of the test organism to be used was centrifuged in a sterile centrifuge tube at a high rate of speed. The supernatant fluid was discarded. Five cc. of the various dilutions of the disinfectant to be tested were added separately to the same amount of sediment in each of the several centrifuge tubes. Thin sterile glass rods were employed to mix the organisms and the dilutions of the disinfectant and these suspensions were kept in a water-bath at the standard temperature for the designated length of time. Other than this variation, wherein most of the culture medium was removed, the technique of the Reddish method was carried out in detail.

With this modification it is possible to observe the action of the disinfectants tested, the two iodine solutions and the E1 and E2 solutions under standard methods of testing and in the presence of a minimum amount of organic matter.

TABLE IV.

B. typhosus (as the test organism—at 20° C.)

Solution.	Dilution Killing in Five Minutes.	Dilution Not Killing in Five Minutes.
3% Special Aqueous Iodine (Karns' Formula)	1:3000	1:4000
3% Iodine in dilute alcohol	1:3000	1:4000
E1	1:40	1:50
E2	1:40	1:50

Staphylococcus aureus (as the test organism—at 20° C. and 37° C.)

3% Special Aqueous Iodine (Karns' Formula)	1:1000	1:2000
3% Iodine in dilute alcohol	1:1000	1:2000
E1	Undiluted	1:2
E2	1:2	1:3

These tests were performed separately on the four strains of the standard *B. typhosus* and on the four strains of the *Staphylococcus aureus*.

The solvents, dilute alcohol and alcohol–acetone–water, killed both of the test organisms within five minutes. The solution of iodides used as the solvent for the 3% aqueous iodine solution (Karns' Formula) did not kill either of these two organisms within fifteen minutes.

BACTERICIDAL EFFICIENCY TEST WITHOUT ORGANIC MATTER.

The bactericidal efficiency test, the results of which are given in Table III, was repeated and modified as was the test, the results of which are given in Table IV. Five cc. of a twenty-four hour old culture of each of the two test organisms employed were centrifuged separately in sterile centrifuge tubes. The supernatant fluid was discarded and one cc. of the dilutions of the disinfectant tested (as given in Table V) was mixed with the test organism in the centrifuge tube. The technique from here on was identical with that mentioned previously, the results of which are recorded in Table III, except that only three transplants were made—one minute, three minutes and five minutes after contact of organisms and dilution of antiseptic.

TABLE V.

Solution.	Dilution Killing in One Minute.	Dilution Not Killing in One Minute.
B. typhosus (at 20° C.)		
3% Aqueous Special Iodine (Karns' Formula)	1:200	1:300
3% Iodine in dilute alcohol	1:200	1:300
E1	1:3	1:4
E2	1:15	1:20
Staphylococcus aureus (at 20° C.).		
3% Aqueous Special Iodine (Karns' Formula)	1:100	1:200
3% Iodine in dilute alcohol	1:100	1:200
E1	+	Undiluted
E2	Undiluted	1:2

It was thought that by this technique it would be possible not only to observe the bactericidal efficiency of the antiseptics tested, employing a large quantity of bacteria and a minimum amount of other organic material but that it would also be possible to observe whether the solvents employed interfere or modify the bactericidal efficiency of the disinfectant when the latter is employed in an environment devoid of moisture or where a minimum amount of water is present. Unfortunately the latter comparison could not be made with this technique as the undiluted solvents, dilute alcohol and acetone–alcohol–water killed the organisms, so that it was not practical to employ the solvents themselves as diluents when the antiseptic was to be diluted.

SUMMARY.

Several methods of testing the bactericidal efficiency of various antiseptic preparations are given. In addition to the Reddish technique (the most rigid technique of the Phenol Coefficient Methods) which was employed, the other procedures were exaggerated tests as compared with conditions found during practical disinfection. If the chemicals tested reveal antiseptic properties by these techniques, there is every reason to believe that they will be just as efficient when used in practice.

From the standpoint of bactericidal action, 3% solutions of iodine were found to be superior to any of the other commonly used bactericidal agents in the dilutions most frequently employed.

CONTRIBUTION FROM THE IODINE SCHOLARSHIP OF THE PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE, WITH THE COÖPERATION OF THE IODINE EDUCATIONAL BUREAU'S INDUSTRIAL FELLOWSHIP AT MELLON INSTITUTE.

RESOLUTIONS ADOPTED BY THE AMERICAN PHARMACEUTICAL ASSOCIATION AT ITS EIGHTIETH ANNUAL MEETING AT TORONTO, CANADA, AUGUST 23 TO 27, 1932, UPON RECOMMENDATION OF THE HOUSE OF DELEGATES, THROUGH ITS COMMITTEE ON RESOLUTIONS.

ADDRESS OF PRESIDENT WALTER D. ADAMS, A. PH. A.

The Committee on Resolutions desires to express its appreciation of President Adam's well-prepared and comprehensive address. His carefully worded and singularly thoughtful observations clearly evidence his fundamental grasp of present problems as well as his understanding of the difficulties involved in their proper solution.

No. 1. St. Louis Drug Survey.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION express its appreciation to the Department of Commerce and to all those agencies and individuals who coöperated in bringing to completion the fact-finding aspects of this work.

Resolved, that the ASSOCIATION express its thanks to the Committee on Use of this Survey who are charged with the duty of establishing ways and means to apply the findings of the Survey.

No. 2. Headquarters Building.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION express its thanks to the Headquarters Building Committee for its excellent work in completing the final details for the site and in awarding of the contract for the erection of the Headquarters Building.

No. 3. Pharmacy Week.

Resolved, that the observance of Pharmacy Week be continued with undiminished enthusiasm to the end of directing increased public attention to the distinctly professional aspects of Pharmacy.

No. 4. Membership.

Resolved, that the Membership Campaign initiated during the year and wholeheartedly supported by the pharmaceutical press be continued, and that the rank and file of the membership be urged to lend their best efforts in this important work.

No. 5. Pharmaceutical Syllabus.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION express its appreciation to the Committee on Pharmaceutical Syllabus for its constructive work in getting the Fourth Edition, covering the four-year course into final form.

No. 6. World's Fair Exhibit.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION commend the work of the Committee on World Fair Exhibit in completing plans for this demonstration of the professional value of pharmaceutical service, in medical progress and medical care.

No. 7. Leaflet No. 14—Pharmacy as a Career.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION commend the Office of Education of the Department of the Interior for the splendid work it has done in preparing and issuing Leaflet No. 14, in which authoritative publication is set forth the requirements for entering

Pharmacy, the standards to be maintained in Pharmacy and the many opportunities offered to those entering the field.

No. 8. The Show Globe as a Professional Symbol.

WHEREAS, the Show Globe has come back into its rightful place as the universal emblem of Pharmacy, and

WHEREAS, its distinctively professional significance should never be subordinated to a desire for commercial gain,

Resolved, that this ASSOCIATION bring to the attention of all groups of Pharmacy the necessity for avoiding any semblance of commercially utilizing this universal professional heritage.

No. 9. Costs of Medical Care.

WHEREAS, the Committee on the Costs of Medical Care has carried out an extensive and thorough study of the economic aspects of the Prevention and Care of Sickness, including adequacy, availability and compensation of the persons and agencies involved, and

WHEREAS, the study of the services of Pharmacy in Medical Care conducted by the Committee has emphasized the importance of Pharmacy in the general scheme of public health,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION endorse and approve the general scope and purpose of this study and that pharmacists be urged to carefully study the conclusions and recommendations of the Committee regarding the adequate use of the professional knowledge and skill of Pharmacists, the distribution and control of drugs and medicines and public health information, to the end that the professional services of Pharmacy may be more effectively directed toward the trends in medical practice and public health work.

No. 10. Vocational Opportunities.

WHEREAS, pharmacists in common with other professional groups have suffered greatly on account of the present distressing economic conditions, and

WHEREAS, the AMERICAN PHARMACEUTICAL ASSOCIATION feels impelled to do its share in setting into motion any proper agency that may be helpful in relieving the suffering,

Resolved, that a special committee be appointed to study carefully the vocational opportunities in the field of Pharmacy to the end of helping local and state groups in the attempts to relieve this unhappy condition.

No. 11. Practical Drug Store Experience and the Four-Year Course.

WHEREAS, the Colleges of Pharmacy of the United States have for the most part, established four years of standard university training as a minimum requirement for a degree in pharmacy, and

WHEREAS, such training is especially devoted to the preparation of those engaged in the practice of Pharmacy with special regard to training in the laboratory and practical phase of pharmaceutical work,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION recommend that practical drug store experience as a legal requirement for registration as a pharmacist, be restricted to one calendar year,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION be urged to coöperate in establishing this standard so that requirements for registration may be definite and uniform throughout the country.

No. 12. Recognition in Government Service.

WHEREAS, Pharmacy is not represented in the Government Services to the extent which its importance justifies, and

WHEREAS, the AMERICAN PHARMACEUTICAL ASSOCIATION has done much toward improving this condition,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION continue to use its best efforts toward this end.

No. 13. The Capper-Kelly Bill.

Resolved, that AMERICAN PHARMACEUTICAL ASSOCIATION reaffirm its approval and endorsement of the Capper-Kelly Fair Trade Bill and that its officers and members lend their best efforts in advancing it toward a successful conclusion.

No. 14. Franklin M. Apple Fund.

Resolved, that the loyalty and devotion of the late Franklin M. Apple to American pharmacy and to the AMERICAN PHARMACEUTICAL ASSOCIATION be again commended and that the fund which now becomes available to the AMERICAN PHARMACEUTICAL ASSOCIATION through settlement of his estate, be gratefully acknowledged.

No. 15. Uniform Narcotic Legislation.

WHEREAS, there seems to be a belief that there is a need for the enactment of uniform state narcotic legislation, and

WHEREAS, this subject has been considered by the Commissioners of Uniform State Laws, and

WHEREAS the fifth tentative draft of the so-called "Uniform State Narcotic Act" is now available—

Resolved by the AMERICAN PHARMACEUTICAL ASSOCIATION that the commissioner of narcotics be urged to critically study and revise this measure, and that a conference of all groups concerned be called as promptly as possible to suggest changes and modifications which may be required so that the legislation may reasonably serve its purpose without the imposition of unnecessary and burdensome regulations.

No. 16. Prescription Tolerances.

WHEREAS, the Federal Food and Drug Administration has deemed it proper to establish reasonable tolerance for ampuls, tablets, pills, etc., and

WHEREAS such reasonable tolerances are not yet recognized for physicians' prescriptions,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION through its president appoint a special committee to confer with the Food and Drug Administration on this matter, and that the Food and Drug Administration be urged to coöperate with this committee for working out reasonable and practical tolerances for physicians' prescriptions as compounded and dispensed by practicing pharmacists.

No. 17. Endowments for Pharmacy.

WHEREAS, many large fortunes have been built largely through sales in retail drug stores and through other pharmaceutical activities, and

WHEREAS, the possessors of many of these fortunes have not been made acquainted with the endowment needs of pharmacy at a time when they were planning the disposition of their wealth, with the result that the proportion devoted to pharmacy, as compared with other professions is not in keeping with its importance and with its services to humanity, and

WHEREAS, the needs of the AMERICAN INSTITUTE OF PHARMACY in Washington, of the many Schools and Colleges of Pharmacy throughout the land, of the necessary researches and surveys in the professional and economic phases of pharmacy, particularly in the improvement of standards and of proper publicity for pharmacy are very great and pressing, if the profession is to fully discharge its obligations, and

WHEREAS, such endowments would not only place pharmacy in a position conforming to its importance but would also enable it to increase its contributions to the comfort and safety of life, and

WHEREAS, it is necessary and timely that it be explained in a dignified but forceful manner, that a proper proportion of the means made in pharmacy should be devoted to its advancement,

Resolved that the AMERICAN PHARMACEUTICAL ASSOCIATION coöperate with other organizations in this important effort.

No. 18. Manufacturers' Excise Tax.

WHEREAS, the Pharmacists of the United States are deeply concerned with the fiscal policy of the Government, and

WHEREAS, the Manufacturers' Excise Tax has been imposed as a part of the Revenue Act of 1932, and

WHEREAS, it is recognized that changes in the taxes imposed may later become necessary and desirable,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION strongly urge pharmacists to give close and earnest study to the effects of the Manufacturers' Excise Tax so that the fiscal and economic policies of the Government may be followed and that intelligent judgment may be passed on changes which may be suggested to meet conditions as they develop.

No. 19. Pharmacy Corps.

WHEREAS, it is amply established that the Committee on Pharmacy Corps has greatly advanced the cause of pharmacy in the United States army by directing attention to the unsatisfactory conditions which prevail and by pointing out the means whereby a responsible professional service might be provided, and

WHEREAS, the Surgeon General of the Army has recognized the need for a pharmaceutical service meeting the highest civilian standards, and

WHEREAS, the Surgeon General has expressed his desire to bring about the necessary improvement as promptly as possible,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION express its appreciation of the Surgeon General's attitude and that the Committee be urged to continue its active coöperation and to take such other steps for the improvement of pharmaceutical service in the Army as may seem advisable under the circumstances which may come about.

No. 20. U. S. P. and N. F. Prescription Ingredient Survey.

WHEREAS, it is believed that professional pharmacy is essential to success in pharmacy, and

WHEREAS, a due appreciation of professional pharmacy must arise from a more intimate knowledge of the various facts and elements involved,

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION endorse surveys of prescription ingredients which have been made during the past year and that determined efforts be made to call the attention of pharmacists to this important work so that prescription stock may be more carefully controlled, that diversification be governed by recognized medical needs, and that prescription practice be placed on a sounder economic basis.

No. 21. Narcotic Regulation and Enforcement.

WHEREAS, there has been marked improvement in the official attitude toward the professions in the enforcement of the federal narcotic act, and

WHEREAS, the commissioner of narcotics has shown a real and sincere desire to coöperate with the public health professions using and distributing narcotic drugs to the end that observance of the law may be brought about through amicable means,

Resolved, by the AMERICAN PHARMACEUTICAL ASSOCIATION that the commissioner of narcotics be commended for his enlightened policy and that an effort be made to have this cooperative attitude form the basis for future regulatory and enforcement programs of the state and national governments.

ADDRESS OF THE CHAIRMAN OF HOUSE OF DELEGATES.

While this address contained no specific recommendations the Committee desires to commend Chairman Thomas Roach for his tribute to the small independent Retail Merchant and recommend the thoughtful consideration of this address to the membership.

No. 22. Establishment of State and Local Sections on Practical Pharmacy and Dispensing.

Resolved, that the state and local pharmaceutical organizations be encouraged in every possible manner to establish sections on practical pharmacy and dispensing and other professional phases of pharmacy in their respective plans of operations, and that they further be encouraged to devote a definite period of time in their programs to these professional phases.

No. 23. Written Reports of National Conventions.

Resolved, that the delegates from the state and local pharmaceutical associations, to the annual meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION be urged to prepare written reports to be presented to their respective organizations, as a means of acquainting the members of the latter with the scope and activities and importance of supporting the national organization through membership and the payment of dues.

No. 24. Pharmaceutical Service in Hospitals.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION through the proper offices be instructed to continue its efforts to secure the coöperation of the Council on Medical Education and Hospitals of the American Medical Association in providing proper supervision over hospital pharmacies by the requirements covering approved hospitals.

No. 25. Coöperation with Other Professional Groups.

Resolved, that the action of the officers of the AMERICAN PHARMACEUTICAL ASSOCIATION in continuing its representation in and coöperation with the National Drug Trade Conference, the Metric Association, the American Association for the Advancement of Science, the National Conference on Pharmaceutical Research, the American Conference on Hospital Service, the Drug Trade Bureau of Public Information, the Committee of Pharmacy Exhibit at the Chicago World's Fair in 1933 and the International Pharmaceutical Federation, be commended and the said officers be instructed to continue such representation and coöperation.

No. 26. Sale and Distribution of Exempt Narcotics.

WHEREAS, a serious study is being given to the need for further control of narcotic drugs through the enactment of a Uniform State Narcotic Act, and

WHEREAS, the objective and purpose of this movement is to more adequately control and regulate the use and distribution of narcotic drugs, and

WHEREAS, the use and distribution of narcotic drugs is restricted to legitimate medical needs,

Resolved, by the AMERICAN PHARMACEUTICAL ASSOCIATION, upon recommendation of the Conference of Pharmaceutical Law Enforcement Officials, that the Uniform State Narcotic Act be written so as to restrict the retail sale and distribution of narcotic drugs and medicines containing any amount whatsoever of narcotic drugs to duly registered pharmacists in their respective states, so that the intent and purpose of the law may be achieved.

No. 27. Resolution of Thanks.

Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION extend a vote of thanks and appreciation for the unfailing hospitality and courtesy of the Canadian Pharmaceutical Association, the Ontario Retail Druggists Association, the daily press of Toronto, Chairman C. O. Playter and Secretary F. A. Jacobs of the Local Committee, Local Secretary R. B. J. Stanbury, the Ladies' Committee, the visiting members of the British Pharmaceutical Society, the hotel and its staff, and all those associated with them who coöperated so effectively in making this meeting enjoyable and successful.

COMMITTEE ON RESOLUTIONS, HOUSE OF DELEGATES.

H. W. PARKER
J. W. DARGAVEL
W. B. DAY
R. P. FISCHELIS
R. L. SWAIN
W. HENRY RIVARD
A. L. I. WINNE
C. F. CLAYTON *Chairman*
C. LEONARD O'CONNELL, *Vice-Chairman*.

THE MARIANNE NORTH COLLECTION.

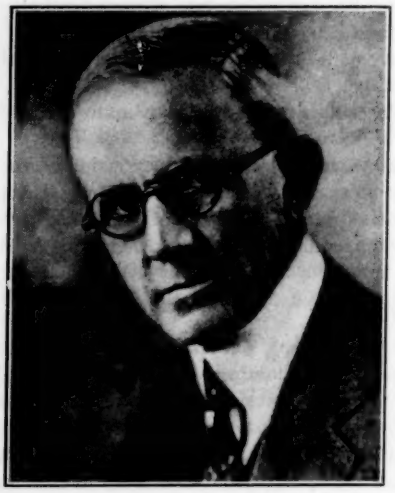
"It would amount almost to an act of injustice not to mention the remarkable gallery of botanical paintings by Miss Marianne North, now thrown open to the public at the Royal Botanic Gardens at Kew. . . . The liberality of the lady artist is as noteworthy as her inexhaustible perseverance and her skill. No less than 627 paintings are displayed. . . . The whole is a free gift to the nation by Miss North. The pictures were painted by herself on the spot, in the countries indicated, and were arranged by herself in their present positions. . . . Miss North has gone out into the world carrying with her the materials of her art, and has reproduced with absolute fidelity and with no little artistic feeling the flowers, fruits, vegetables, trees and shrubs she deemed of interest, surrounding them with whatever natural objects would serve to make the representation more thoroughly realistic."—From The *Chemist & Druggist* of July 15, 1882.

ADDRESS OF THE PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

BY WALTER D. ADAMS.

That we meet to-day on foreign soil, in the hospitable midst of the land which forms the northern boundary of our United States, is indicative of the peace and harmony which exist between two great nations, and of the unity of purpose, the unswerving quest for knowledge, the unfaltering desire to be of service to humanity, which forge bonds even deeper than patriotism between and among the members of the glorious profession of pharmacy, in no matter what land, of no matter what race, subscribing to no matter what creed.

Here we are assembled who have been part and parcel of a depression so widespread as to leave unaffected no country, large or small; no human being, of much consequence or little. Thus I might have come before you, with little report of progress, and accepted your expressions of sympathy over the inevitable. We might have said, "Progress for American Pharmacy during the economic depression was not to be." And we might have consoled ourselves with the thought that clouds do not hover above us forever, nor professions long stand still.



WALTER D. ADAMS.

It is, however, my happy privilege to point out to the members of this convention that American Pharmacy is a militant profession. It is my good fortune to be able to come before the membership of this ASSOCIATION and report that American Pharmacy during the depression has made substantial progress, has accomplished much, has not for an instant been idle.

ST. LOUIS DRUG STORE SURVEY.

During the world's worst economic upheaval there has been conducted one of the most extensive, one of the most intelligent undertakings of which any profession or industry may boast. The St. Louis Drug Store Survey represents one of the longest strides forward which American Pharmacy has taken. The fruits of that Survey are varied and many, its results are fundamental and far-reaching. The A. PH. A. has been represented on the Committee which has coöperated with the Department of Commerce in conducting the Survey by the Chairman of its Council, and has been gratified to see its request granted, that the professional operations of the drug store be included in the study.

Wide publicity has been given to the completion of the Survey and to the Conference held in St. Louis in April last, when preliminary reports on the Survey were submitted and tentative plans made to put into effect the information resulting from the Survey.

* Toronto, Canada.

Your president was assigned a place on the conference program but was unable to attend on account of illness. Our Secretary, who was present, was called back to Washington before the Conference began, by a Congressional hearing on legislation dealing with the Headquarters Building. However, the ASSOCIATION was represented by a number of members and will coöperate in every possible way in promoting a sound use of the very significant and important data gathered during the Survey. The profession and industry of pharmacy are to be commended for lending themselves to such a searching study of their professional and commercial operations, with considerable expense to themselves, and the Department of Commerce is deserving of our appreciation for the splendid coöperation that has been given. We also owe much to the committee which has directed the Survey and especially to its chairman.

It is, of course, too early to draw conclusions from the Survey. It is encouraging, however, to note that drugs and medicines and professional services constitute such a large proportion of the operations of the modern drug store. This is the work and service for which pharmacy exists and is licensed by the states. When and if it becomes the lesser responsibility of the drug store, we may expect to see the wisdom of giving pharmacists a licensed position in society seriously questioned. The data which are the product of that Survey help to assure the high destiny of Pharmacy in America.

COMMITTEE ON THE COST OF MEDICAL CARE.

During this period of economic stress American Pharmacy has helped to bring to a successful conclusion, as its large share of the work of the Committee on the Costs of Medical Care, a survey on the costs of medicine which, in its scope and wide vision, leaves Pharmacy wealthier and wiser. The Committee has recently issued, as one of its important findings, a comprehensive study of pharmaceutical service, one of the authors of which is a representative pharmacist. Time does not permit extended comment on the conclusions and recommendations of this study. They are important, however, and our ASSOCIATION should give them the attention which they deserve. Although, as in the St. Louis Survey, it is inevitable that any worth-while study will bring out certain conditions and trends that are more or less unsatisfactory, particularly from the standpoint of those interested in pharmacy, decisions as to correction should not be too hastily determined nor put into effect too rapidly. Here again, we can be encouraged by the relative importance of pharmaceutical service as a part of medical care and especially by the confirmation that the public still looks to pharmacy for pharmaceutical service, about 88 per cent of all drugs and medicines being furnished by the drug stores.

It should be mentioned that in addition to the prominent pharmacists that are members of this nation-wide committee and of its research staff, our secretary was invited to serve on the committee selected to act in an advisory capacity in the preparation of the final report of the Committee.

THE U. S. P. AND N. F. PRESCRIPTION INGREDIENT SURVEY.

The U. S. P.-N. F. Prescription Ingredient Survey is now approaching completion and will soon be published. For the first time, we can know authoritatively what drugs and medicines are prescribed and the character of prescription practice.

Opinions that the writing and dispensing of prescriptions have deteriorated in number and in character have disturbed both medicine and pharmacy for some time. Preliminary reports on this Survey already released, demonstrate that most, if not all of these opinions, are unfounded.

Prescription practice is not so extensive nor entirely of such character as we should like it to be and as we believe would be to the best interests of the public. However, pharmacy can take hope from the results of this Survey also. It indicates clearly the lines along which physicians and pharmacists should coöperate.

Briefly noted, this Survey shows that officially standardized drugs and medicines are prescribed much more than unofficial; that dispensing does not consist in transferring from one container to another; that more than two-thirds of the prescriptions contain more than one ingredient; that more than two-thirds require expert training to compound them; that the average charge is certainly not excessive; and that only about ten per cent of prescription ingredients are used to the extent of one-tenth of one per cent, 0.1, which should lead to extensive simplification in prescription stock with corresponding saving to pharmacists and to their patrons.

The U. S. P. authorities and the A. Ph. A. have rendered a great service to pharmacy in these studies which will have definite results for all branches of pharmacy. Chairman Gathercoal of the Committee on N. F. has very efficiently directed the study with the coöperation of Chairman Cook of the U. S. P. Committee and many others.

PHARMACY EXHIBIT AT WORLD'S FAIR.

During this era of economic misfortune American Pharmacy has continued the plans for its exhibition at the World's Fair to begin in Chicago in 1933; has continued with unabated enthusiasm to labor that the exhibition may be the greatest and most informative of the kind in the four thousand years of our profession's history. It is not necessary to review the history of the proposed World's Fair in Chicago in 1933. Although the depression undoubtedly has and will have its effect, those in charge of the Fair have so wisely organized and guided it as to insure success. In any exposition to illustrate scientific progress, as this will, the medical sciences, particularly medicine, dentistry and pharmacy, would have an important part.

It will be recalled that former President Christensen took the lead in organizing in 1930 a committee on the Pharmacy Exhibit, representing the entire profession and industry, and of which he has been the chairman. The Committee has had to mark time and change its plans to correspond to the many modifications that have been found necessary in the plans for the exposition. Finally it was decided to separate the professional from the industrial exhibits. The profession was then allotted a splendid space, equal in size and location with those allotted to medicine and dentistry, and the A. Ph. A. was requested to assume supervision of the assembly and management of the exhibit.

Chairman Christensen and his committee have about completed the plans for the exhibit, which will be much less costly than originally believed and which should be carried through. Pharmacy cannot afford to miss this opportunity to coöperate, on an even basis with medicine and dentistry, in impressing on the public the value of pharmaceutical service in medical progress and medical care.

GROUND BROKEN FOR HEADQUARTERS BUILDING.

It is my exceedingly happy privilege to report that ground has been broken in the nation's capital for the erection of the Pharmacy Headquarters Building, which will stand as an inspiring monument to pharmaceutical research and progress, not merely in this country, but in all the countries on the face of the earth. We have come to think of this structure as representing in steel and stone the progress of pharmacy and of our ASSOCIATION, and as being the future home of pharmacy in our country. Our faith in the value of pharmacy and our confidence in its continued advancement have been strengthened by the enthusiastic support which the project received from every division of our calling and of every section of our country. In completness of organization, in wide-spread interest and in the amount subscribed and paid in, our project has set a record for the professions at least. It is strictly a pharmaceutical effort, although we are happy to acknowledge the splendid advice and assistance of others, particularly of the members of Congress and of the Governmental agencies with which we have worked.

It has been difficult to await with patience the delays that have prevented the completion of our plans, although it was evident to those who were directing the effort, that the beauty and value of our institution was being tremendously enhanced by the very developments that were delaying us.

The Congress in the session just closed unanimously approved a joint resolution, closing the short street that interfered with the proper location of our building and authorizing the transfer to the ASSOCIATION of such an area of Government property adjoining that we own, as to locate the building to the best advantage.

A contract for the erection of the building has been awarded and an impressive ground-breaking ceremony was held on July first. The work is now in progress with the expectation that the building will be completed and occupied before our next annual meeting.

The reports of Chairman Dunning and others will give the details of progress. This building, important as it is, is but the first unit of an institution that will grow in importance and in usefulness to pharmacy and to the American people. I am indeed grateful that its erection should have been begun during my administration.

PROGRESS AND CHANGE OF POLICY SHOULD BE APPROACHED CAUTIOUSLY.

It has been my duty to give serious consideration to the work of the ASSOCIATION, to its management, and to such changes in policy and in administration as may appear to be required for its progress. To a few of the more important of these questions, comment will be directed in other parts of this address.

Certain changes are so necessary as to be self-evident; others are suggested by a study of our organization and its functions. The organic changes should, in my opinion, be subjected to most careful study before adoption, such, for instance, as in our policy with respect to membership, to dues, to publications, to the possible extension of service features and many others. Our ASSOCIATION has been of value largely because it has kept above a consideration of temporary conditions and has centered its attention on basic questions.

From a study of the recent proceedings of the ASSOCIATION, I gather the thought of many that our present problem is to complete the Headquarters Building, to bring together our conflicting functions, to concentrate our scattered activities.

Then, to carefully appraise them and the work ahead, before making radical changes. With this thought, I am in hearty accord and for this reason will not discuss certain matters which otherwise I would feel obligated to present. And may I add that this policy has the complete approval of those most directly concerned with the management of our ASSOCIATION. My experience, limited as it has been, impresses me that the AMERICAN PHARMACEUTICAL ASSOCIATION is approaching its greatest usefulness, that preliminary work of a basic character is being carried out, that the thought of American pharmacists is returning to a sound appreciation of the purposes and functions of pharmacy, and that we should bend our every energy to complete our facilities for greater service in the Headquarters Building. I am convinced that nothing will so advance our cause as the consolidation of work and influence that can follow its completion.

NATIONAL PHARMACY WEEK.

There was organized in the United States and successfully concluded the most wide-spread observance of National Pharmacy Week, the profession's outstanding event. It is evident that this movement has steadily gained in interest and influence and that each succeeding observance has been more successful. In large part, this has been due to the leadership and enthusiasm of the Father of Pharmacy Week, Dr. Robert J. Ruth, to whom our profession is deeply indebted for this opportunity to annually impress upon the public the value of pharmaceutical service.

Following our last annual meeting, Dr. E. L. Newcomb took up the work as acting-chairman of the Committee on Pharmacy Week and carried it on successfully through the seventh observance during the week of October 11 to 17, 1931. We are indebted to Dr. Newcomb and those who coöperated with him in completing, for the year, the unfinished task which Dr. Ruth laid down at his untimely death.

It then became my duty to select a chairman of the Committee to succeed Dr. Ruth. Dr. Anton Hogstad, Jr., accepted the responsibility and has brought to the work splendid enthusiasm and a firm belief in the value of Pharmacy Week. His effort will be to carry on in general as Dr. Ruth had planned. I wish to acknowledge the coöperation he has had from the other members of our Committee, from the members of the N. A. R. D. Committee, and from the profession and industry at large, and to urge continued support in his difficult task of carrying forward this important effort. The adoption of Pharmacy Week by our friends in many of our foreign countries has been to us most gratifying and for this action upon their part we are profoundly thankful.

The feature of the last observance was the coöperation of the state associations in the National Window Display Contest. Many of them offered prizes for the best state display and this served to bring into the national contest a number of contestants and such splendid displays as to make the award of the national prize a really difficult task. The National Prize is again offered, the state associations will be requested to continue their coöperation and it is hoped that each state association will take an active part.

Two phases of Pharmacy Week observance seem to warrant special comment.

The movement was intended to interest the public and it has been remarkably successful. It cannot be fully successful until every pharmacist coöperates. As yet, but a small proportion of our pharmacists have taken part in the observance, al-

though everything reasonably possible has been made available for their use. We must appeal for more wide-spread coöperation from pharmacists.

Pharmacy Week was intended to emphasize the value of pharmaceutical service. It was to be an effort to illustrate what service pharmacy rendered, as a profession, in promoting public health and in contributing to the comfort and well-being of our people. If the movement is employed even unintentionally for any other purpose it is bound to fail in its major purpose. Those who direct its observance, should constantly be on guard to insure that Pharmacy Week is devoted to the altogether fine purpose for which it was established.

It is both my duty and my pleasure to recommend that the observance of National Pharmacy Week be continued annually in undiminished enthusiasm; that we spread the gospel of this annual occasion far and wide, to the furthermost villages in our land and to all our sister nations everywhere. Long centuries ago the profession of Pharmacy came into its own. It is no small part of our task to see that the profession of pharmacy clings to its own. An ever-increasing observance of National Pharmacy Week will aid us in this respect in no unimportant measure.

PHARMACY AND THE NATIONAL GOVERNMENT.

The ASSOCIATION has been able to announce each passing year some forward step in securing for pharmacy a wider opportunity for service and better recognition as a public health profession, by our national Government.

Early last fall, the Veterans' Administration issued Supplement No. 8, Revised Regulations for Positions in the Field Service, changing the grade of Pharmacists from the Sub-Professional to the Professional Classification and changing the designation of Assistant Pharmacist to Pharmacist's Assistant. This was in response to a request from this ASSOCIATION and the changes are in accordance with the recommendations of the Personnel Classification Board with respect to the classification of Civil Service Employees in the Field Service of the Government.

The Office of Education of the Interior Department has prepared and issued Booklet No. 14, "Pharmacy," as one of a series devoted to the professions as a career. Of the public health group, medicine, dentistry, veterinary medicine, nursing and pharmacy are represented. The booklets fill a long-felt need for an authoritative publication on the requirements to enter, the standards to be maintained, and the opportunities offered by each of the professions.

The most significant statement in the booklet devoted to pharmacy is that "As the educational requirements for entering the profession of pharmacy have increased, there has been a corresponding recognition on the part of the Government of the professional qualifications of pharmacists."

The Government distributes these publications to a limited list and our ASSOCIATION was invited to coöperate in a wider distribution as the American Bar Association had done in the case of the booklet on Law. This invitation was promptly accepted with the suggestion that before such distribution the booklet be rewritten to comply with the four-year course. The suggestion was as promptly accepted and the work has been done with the coöperation of the Colleges, the Boards and many others. The rewritten booklet is ready for printing but this has been delayed by the unusual demands made upon the Government Printing Office by the recent session of Congress. It is hoped that they will soon be available.

The ASSOCIATION plans to distribute about 45,000 copies to the public and private high schools, to superintendents of education and to public and private libraries. Upon hearing of the value of the publication and with his usual generosity Carl Weeks has offered to mail one to each independent drug store in the country.

I suggest that a resolution of thanks be adopted, including the Office of Education, Mr. Weeks, and all who have coöperated with our office in rewriting the booklet.

The situation in the Navy and in the Public Health Service remains practically as it was reported at the Miami meeting. Our officials have overlooked no opportunity to improve the pharmaceutical service in any branch.

PHARMACY CORPS.

There has been no let-up in the efforts of the ASSOCIATION to bring about a more adequate and dependable pharmaceutical service in the United States Army. Several conferences have been held with the Surgeon General, and all of the various elements involved have been given diligent and candid consideration. The matter was also discussed with members of Congress and others who had shown an understanding interest in the efforts of the ASSOCIATION. A general survey has been carried out by the Medical Department for the purpose of ascertaining the exact number of pharmacists now in the army as well as to provide an estimate of the number which a proper pharmaceutical service would require. This information is essential to our efforts, and will be most helpful in working out the problems which exist. The Surgeon General has been coöperative, and has shown a real interest in the whole matter. In frankness, I think, it can be said that there is no lack of sincerity in his desire to bring about the changes necessary to place pharmacy on a firmer and sounder basis. However, in equal frankness, I think it should be said that the Surgeon General is committed to the plan of incorporating pharmacy as a distinct division in a general medical administrative unit, and that he is much opposed to setting up a separate Pharmacy Corps. The Medical Administrative Corps, from the Surgeon General's point of view, is more suited to the general medical needs of the army, and would be in keeping with broadly conceived plans for a more efficient medical service. The Pharmacy Corps, as a separate unit, would be more expressive of pharmacy's public health and professional function, and, in the opinion of many, would be the most effective means of providing a professionally responsible pharmaceutical service.

No aggressive support was given to either view. The financial crisis confronting the national treasury, and the imminent need for strict economy in the administration of the Government made any aggressive move impossible. The Surgeon General, in keeping with all branches of the Government, was held to a reduced budget for the operation of his Department. He had to face the realities of the situation and to conform to a policy of retrenchment and strict economy. He expresses his position in the following words: "Loyalty to the War Department and recognition of the present situation in our country make it highly improper as well as inadvisable to attempt to obtain action on a bill which would effect an increase in the medical department. While it is highly desirable that we have personnel in the Medical Department of the Army who have been trained in pharmacy in accordance with the highest civilian standards, the situation is not so urgent that it cannot rest until better times justify further steps, with the backing of the War Department."

It must be admitted that the present situation is not propitious for an aggressive move; nevertheless, a study of the progress so far made seems to suggest three possible courses of action. *First*, to support the Surgeon General in his efforts to bring about the establishment of the Medical Administrative Corps, in which pharmacy will find a place with other professional and technical groups; or *second*, to adhere to our previous plan of creating a pharmacy corps as a separate unit; or *third*, to continue the Committee, and to urge it to continue its efforts in securing a full and comprehensive knowledge of the many facts involved, with the power to take such action as its mature and deliberate judgment may dictate as wise.

I feel that the Committee, of which Dr. R. L. Swain is chairman and to whom is due much credit for the splendid progress made, together with those officers of the ASSOCIATION who have worked with it, have done excellent service and that a constructive viewpoint has marked all of the efforts which have been put into this difficult task.

The ASSOCIATION should give close and earnest study to the matter, and aid the Committee in coming to the soundest conclusion. Once the proper course is decided upon, every effort should be given to bringing about an early solution of the difficulties.

PLANT SCIENCE SEMINAR, CONFERENCE OF PHARMACEUTICAL ASSOCIATION SECRETARIES, CONFERENCE PHARMACEUTICAL LAW ENFORCEMENT OFFICIALS.

The ASSOCIATION has been fortunate in its relations with the several organizations that meet at the same time and place with it. We are pleased to have the three organizations mentioned above demonstrate their value and progress to the extent that they are recognized as permanent divisions of the ASSOCIATION, by being given representation in the House of Delegates. It has been the purpose to provide each group with an organization of its own and yet to closely associate these organizations with the parent body. We may soon reach the point, if we have not already reached it, where time alone will make some simplification necessary in the program of our annual meeting. If so, a way to the required rearrangement can be worked out, I am confident, without lessening the advantage of having all groups of pharmacists allied with the A. PH. A.

NARCOTIC LEGISLATION.

The A. PH. A. has taken a very prominent part in legislation by the several states to control the distribution and use of narcotics, and in the drafting and passage of the Harrison Anti-Narcotic Act. Since the passage of the Federal law, we have believed that state legislation should be so amended as to be supplementary to it and with such added provisions as to control conditions and abuses which might be local in character.

During recent years there has been persistent agitation, accompanied by questionable propaganda, for more stringent legislation by the states for the control of narcotics. In some instances, this has led to the enactment of laws which are apparently not required and which add unnecessarily to the tax burden and to the restrictions on those licensed to use and distribute narcotics.

About five years ago, a special Committee on Uniform Narcotic Act was appointed by the Conference of Commissioners on Uniform State Laws to prepare a satisfactory draft for submission to the states. Four tentative drafts have been

prepared and a final draft is supposed to be approved at the fall meeting of the Conference. Pharmacy was represented for the first time at a meeting of the committee during the 1931 meeting of Conference in Atlantic City and the representatives presented the views and recommendations with respect to such legislation as is necessary. We should respectfully request that there be a conference of all interested groups before the final draft is approved and that the final draft be made available at the coming meeting of the Conference.

The control of narcotics is one of the important questions before the Conference of Law Enforcement officials at this meeting. Officials of the U. S. Bureau of Narcotics will attend and confer with those charged with the enforcement of such legislation in the several states. This should lead to an understanding as to what is most advisable so far as pharmacy is concerned, with respect to additional legislation by the states. I trust that a resolution expressing the views and wishes of this ASSOCIATION can be adopted during this meeting.

EDUCATION AND PRACTICAL TRAINING.

As I have read the early history of the ASSOCIATION I have been impressed with the recognition by those who founded it, that the future development of pharmacy would depend in a great measure upon the education and training of those who entered its ranks. Education and practical training have been among the important questions to which the ASSOCIATION has given constant and earnest attention.

With the establishment of the Association of Colleges of Pharmacy and the Association of Boards of Pharmacy, the parent ASSOCIATION has looked to these organizations to regulate and advance pharmaceutical education and training, giving them her counsel and support in the discharge of the basic functions for which they were created. It is my belief that candid students of the past will clear the ASSOCIATION of any lack of interest or leadership in promoting sound and effective education and training, and registration in pharmacy. The ASSOCIATION has attempted to make vocal the views and wishes of the practitioners of the profession, those who know by every-day experience what is required in the way of preparation for those who render pharmaceutical service. Education and training should be in advance of practice but not too far in advance; they should never be on a level or behind practice. The ASSOCIATION has attempted, and successfully so, I believe, to act as a leveling influence between those who might go too slowly and those who might go too rapidly, bearing in mind that ours is a profession of service and of great responsibility with respect to its technical training.

Standards are as necessary to education as to drugs. There probably will never be agreement as to the fairness or correctness of standards in either field. We reach workable agreements in these fields, as in all others, by compromise and thereby progress results. The very essence of progress in such efforts is a willingness to abide by and support the decisions of the majority, and at least to give them a fair and honest trial. The present-day standards of professional education are well known and unquestionably represent the views of the large majority of educators and educational institutions. If we wish recognition as a profession, we should meet the requirements, whether we agree with them in every respect or not, so long as they do no violence to the responsible duties which the state has placed in our keeping.

This year we approach a mile-stone in the history of pharmaceutical education and it deserves more than passing recognition on our part. This year we will place pharmaceutical education on a recognized professional and collegiate basis and on a parity with education in other professions, sciences and arts. From this time, the men and women who enter pharmacy will receive an education comparable to that in other activities for which a standard collegiate training is required. No step that we could take will so surely give pharmacy a place among the recognized professions.

PHARMACEUTICAL SYLLABUS.

The Committee on Pharmaceutical Syllabus has met here in Toronto to reach final decisions, looking to the early issuance of the fourth edition covering the four-year course. This has been a heavy task and one requiring careful thought and investigation. Although it is disappointing that the Syllabus could not have been made available in time to be a guide to our schools and colleges in working out the four-year course on a more uniform basis, we are indebted to Chairman J. G. Beard and his associates for the constructive and hard work that they have given to this revision of the Syllabus.

With these advances, pharmaceutical education and training, and pharmaceutical registration are placed on a sound basis and I desire to congratulate the entire profession and industry on having reached such an accomplishment.

We shall look with confidence to our teaching institutions, to our Syllabus Committee, and to our boards of pharmacy, to see that the requirements are fully and honestly met and with no lessening of the sound technical and practical training so necessary to the success of the pharmacist and to the protection of the public.

AMERICAN COUNCIL OF PHARMACEUTICAL EDUCATION.

The adoption of the four-year course makes possible another forward step, the formation of the American Council of Pharmaceutical Education representing the A. A. C. P., the N. A. B. P. and the A. PH. A.—the teaching institutions, the boards of pharmacy and the practicing pharmacists. Our Council fortunately, is to have the advice and coöperation, through an associate member, of the American Council on Education, the body that includes in its membership most of the higher educational institutions of the country. Our Council will set up minimum standards for schools and colleges of pharmacy, will approve those maintaining these standards for the guidance of the boards of pharmacy and others, and will coöperate for the improvement of pharmaceutical education and registration.

The placing of the education of the practitioner on a collegiate basis makes it possible for our schools and colleges to establish sounder relations with the graduate schools of their institutions and to offer to those who wish it, graduate instruction in pharmacy leading to the master's and doctor's degrees on the same basis now open to students in other professions and sciences.

UNEMPLOYMENT.

As a result of economic conditions American Pharmacy has suffered not least from unemployment. Thousands of our deserving pharmacists have been in want. Local associations and committees have, by heroic endeavors, been able in innumerable instances to relieve the pressure of adversity. Yet the responsibility is a national one, and as such comes within the realm of this ASSOCIATION to consider. It

is my recommendation that the AMERICAN PHARMACEUTICAL ASSOCIATION create a committee on employment, to study ways and means for securing employment for pharmacists, not merely in times like these, but in times more nearly normal. Such a committee, functioning permanently, can advise us definitely on the state of employment and clearly point out to us our course of action.

THE EMBLEM OF PHARMACY—THE SHOW GLOBE.

It is my privilege to report that the Show Globe, universal symbol of Pharmacy, has come back once more to its rightful place in the pharmacies of our country. This symbol we must never again permit to be relegated to the past. It is a light that has been handed down to us by the pioneers, our predecessors, who so zealously laid the foundations of the profession it is our high honor to carry on. Let us keep that torch burning.

The profession of pharmacy is a profession of service. Pharmacy belongs to no group of individuals, to no group of nations. Pharmacy belongs to the world; it belongs to humanity. We who are engaged in its practice have solemn obligations; and not the least of these is to insure that the light and the warmth from its spiritual flame are carried to those highways and by-ways in which, often under severest handicaps, pharmacy is practiced. Membership in the AMERICAN PHARMACEUTICAL ASSOCIATION is a warrant of one's belief in pharmacy. Membership in the ASSOCIATION is a warrant that what is right, that what is new in pharmacy, will be known to and by every member. Our organization is sound in its science, sound in its idealism. But we who now are of the organization must not forget that on the highways and by-ways are those small places to which the word of pharmacy's progress is slow to penetrate. The AMERICAN PHARMACEUTICAL ASSOCIATION will be greater, the profession will be stronger, if and when the membership of the ASSOCIATION is developed in our small towns and villages. Toward this end I pledge my continued efforts in behalf of the membership campaign which was initiated during the year, and in which we have received the whole-hearted coöperation of the pharmaceutical press. Toward this end I recommend further activities on the part of the present membership.

SECRETARY AND EDITOR.

The services of our Secretary, E. F. Kelly, and of E. G. Eberle, the Editor of our JOURNAL, to whom has been awarded the Remington Medal for 1932, have been many and great. With inspiring loyalty they shoulder the true executive burden of our ASSOCIATION. Unselfish; unremitting in their labors; no seekers after glory, but always intent in their watchfulness of Pharmacy's welfare, they find us, year after year, ever deeper in their debt.

CONCLUSION.

From the small town of Forney, in the great state of Texas, you called me to assume an honor I little deserved, to bear a responsibility which many others were more qualified to accept. In my humble way I have endeavored to do my duty, confident always that the strength of an association lies fundamentally and finally in the rank and file of its membership. No man can serve as president of the AMERICAN PHARMACEUTICAL ASSOCIATION without understanding that pharmacy has recognized him beyond his merit. I shall carry with me to the end of my days the memory of the trust you placed in me.

ADDRESS OF CHAIRMAN OF THE HOUSE OF DELEGATES.*

BY THOMAS ROACH.

To the Members of the House of Delegates of the American Pharmaceutical Association:

I thoroughly agree with the views expressed by a former chairman of the House of Delegates in his opening address—"that there is need to stimulate Pharmacy to a fuller use of the facilities which organization has made available," and that "this need should be emphasized time and time again."

Repetition of the above injunction cannot, for the good of Pharmacy and those who labor within its folds, be uttered too often.

If I were a Moses to the pharmacists of the country, I would enjoin them to bind that motto—"make use of the facilities of your organization," upon their "arms and their foreheads, and again upon their doorposts." It is a sad commentary upon our profession that we have so lightly regarded the organizations that have been perfected and kept alive for our protection and growth.

THOMAS ROACH.

As pharmacists and business men, we, as a class, do a lot of kicking and complaining about things that are not to our liking, yet make very little effort in getting our organizations, whether City, State or National, busy on the job of helping relieve the aggravating conditions.

One must inevitably come to the conclusion that, as officers of drug organizations, we have not done a good job of selling to the rank and file that we are trying (or pretending) to serve. The impression must not be left that no effort along this line has been made, or is not being made at this time, but the amount that has been done is so small in comparison to the work that is yet to be accomplished, we feel like saying of it that "the mountain is yet to be scaled."

Your Chairman is not coming to you with any new-fangled ideas or a vision of a "Utopian's condition of Pharmacy," but he does believe that Pharmacy should be organized down to the "cross-roads" which would make the full force and effect of our organization felt, like our friend, the American Medical Association does.

From its very inception—eighty years ago, the AMERICAN PHARMACEUTICAL ASSOCIATION has sought to adapt itself to the problems of the individual pharmacist, and labor to make his way more pleasant and his endeavors more profitable; also, to provide him an avenue to express his ideas and impressions.

The creation of the House of Delegates of the AMERICAN PHARMACEUTICAL

* Toronto, Canada

ASSOCIATION was to enable the ASSOCIATION to better carry out this splendid ideal, for in its forum, delegates from the various State Associations and affiliated groups have a voice and vote in its deliberations.

It seems to me that one of the results of the "economic revolution" through which we have been passing during the last three years, is the appearing on the horizon of the "day of the little business man."

Big business with its chains and combinations, have proven themselves wholly inadequate to deal with the situation.

Senator Royal Copeland of New York recently said in a speech delivered to the United States Senate that:

"As we look back over the period since November, 1929, and witness the efforts that have been made to revive business, employment and prices, and with what results, it must come to each of us that there is a lesson that the Nation must learn as to where our greatest reliance can be placed in such an emergency.

"Not to the so-called leaders of industry and finance, to whom we had come to look as the sources of all wisdom in practical affairs, can we turn for guidance. It is a question whether their performances are not largely responsible for our dilemma.

"But there is a solid satisfaction in the part which the ordinary business man has taken in these trying times. Except for that we would have fared far worse.

"Amidst all the turmoil it is the small man who has kept his head. It is our neighbor—the retail merchant—who has stood in the breach and provided sorely needed merchandise on credit to his customers, when our great institutions were frantically forcing collections, calling loans and laying off employees. If we would know who it is that has conducted our Community Chests across the country and subscribed largely to what went into them for the relief of the distressed, go into any town in your State and look over the roster. We will be struck by the fact that it reads like a directory of local retail stores. It is this same class which has furnished more nearly the normal taxes than any other section of the business community.

"It is to the legion of ordinary business men, for their sanity and courage in times when their 'betters' were in retreat that our hats may well be lifted. And their services and needs should not be forgotten by their country."

To these words of wisdom I could add but little except to say "them's my sentiments."

The point I wish to emphasize is that it is to the small independent druggist who makes up no small part of that "legion of ordinary business men" referred to by Senator Copeland, that the country is bound to look in these times of stress, and from a pharmaceutical standpoint it is they who are able to—and must—"carry on."

Dr. F. J. Cullen, Chief of Drug Control, Food and Drug Administration, Washington, D. C., was awarded the Order of the Purple Heart, receiving this distinction because of his overseas service during the World War. The Order of the Purple Heart was founded by General George Washington for distinguished military service during the Revolutionary War. Dr. Cullen has also received two silver star citations, and has been recommended for the Distinguished Service Cross. Dr. Cullen was the regimental surgeon, Tenth Field Artillery, Third Regular U. S. Army Division, during the War.

ADDRESS OF THE PRESIDENT: SOME PROPOSED STANDARDS.

BY TOWNES RANDOLPH LEIGH.

THIRTY-THIRD ANNUAL MEETING, AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY.

For the first time in the history of the Association we have assembled on foreign soil. Happy are we to convene in this beautiful and historic city with the euphonious and significant name, Toronto, which is derived from the Huron word meaning "Place of meeting." Thus, in the language of the Indian this is our Toronto—our meeting place. Our coming together outside the confines of our own country is to me symbolical of the universality of the science of pharmacy. Wherever there is man there is the practice of pharmacy, be it represented by the crudity of the savage medicine man or by the skill and art of the modern specialist.

TOWNES R. LEIGH.

It has been said that when a German travels abroad, the theme of his conversation is the superiority of the Fatherland; a Frenchman talks about the grace and the glory of La Belle France; but an American talks about himself. In keeping with that tradition let us talk about ourselves, as an introduction at least, so that our Canadian friends here assembled with us may know our origin, our growth and our aspirations. Moreover, a brief review of the salient points of our history also should prove helpful to us and suggestive of our future.

It required nearly as many years to organize the American Association of Colleges of Pharmacy as have elapsed since it came into existence, in 1900, under the title of the American Conference of Pharmaceutical Faculties. Thirty years earlier a conference of delegates from various colleges of pharmacy met in Baltimore for the purpose of standardizing requirements for graduation and there formed an organization which seems to have met quite regularly for sixteen years. Of the seven recommendations made at the first conference for consideration at the second convention, the one requiring four years of practical experience before graduation indicates that the colleges were obsessed with the old apprenticeship idea of education and doubted their own ability to teach. The Department of Pharmacy of the University of Michigan was subsequently refused admission into the conference because it was unwilling to meet such a requirement. This and similar drastic legislation, or self-imposed regulations, evidently at first weakened and finally destroyed the conference, which apparently passed out of existence in 1886. There was but a feeble attempt and little or no concerted action during the following fourteen years to form an Association for the advancement of pharmaceutical education in the United States. However, as time passed, progressive

educators began to feel keenly the need of an organization devoted to the improvement in the training and practice of pharmacy.

This sentiment was converted into a decision by a motivating letter sent forth by the secretary of the Maryland College of Pharmacy, the same institution that had convoked the first conference thirty years earlier. In response to this appeal the representatives from twenty-one colleges, several of which do not now exist, assembled in Richmond on May 8, 1900, and convened daily for three days. A constitution was adopted declaring "The object of this conference shall be to promote the interests of pharmaceutical education." The purpose has remained unchanged to this day though the phraseology has been slightly changed, and now reads "The object of the Association shall be to promote pharmaceutical education and research."

The minimum admission requirement to the study of pharmacy was only a common school education for the first eight years after the organization of the American Conference of Pharmaceutical Faculties, as this body was known until 1925, when it became the American Association of Colleges of Pharmacy. One year of work in an accredited high school or its equivalent was demanded commencing with the session of 1908–1909, providing, however, that these requirements did not apply to matriculants, who were bona fide legal residents of certain designated states. It seems that in the early days the druggist and teacher and student of pharmacy in Philadelphia, Boston and New York had little or nothing in common with the educational ideals of the faculty and students of Pennsylvania, Harvard and Columbia, so different were the standards of education. A score of years ago a pupil upon the completion of the elementary school course could have earned a degree in pharmacy in less time than he could have prepared for entrance in a recognized college of arts and sciences. Our progress has been painfully slow. The satisfactory completion of four years of high school work or its equivalent as an entrance requirement did not become mandatory upon the colleges of the conference until September 1923; and it was not until July 1, 1932 that member-colleges became obligated to require for graduation not less than four years of college work. This is, therefore, the most memorable year in the history of our Association. We have just entered the kingdom of colleges. Henceforth, the Association demands that the student desiring graduation from any of its colleges not only possesses a preliminary training equivalent to that required for admission to a standard college of liberal arts, but that he also complete a four-year course of study as the minimum requirement for graduation. The goal long and ardently desired by some of our colleges has now been obtained by all. A few of the colleges of the Association had previously established this standard and even offered graduate courses leading to the degree of Doctor of Philosophy; but this is the first time that each of the fifty-seven colleges of the Association can be truly called a college in the general, accepted meaning of the term by the educational world.

We, therefore, now stand in the dawn of a new era in pharmaceutical education and our plans for the future should be formulated accordingly. However, we are not yet world leaders. We have barely reached the standard that has long been in effect in some of the leading European countries where an education substantially equivalent to a four-year college course has been required of prospective pharmacists. We do stand on a higher elevation than ever before in our history. We do

occupy for the first time a position of full fellowship with other standard institutions of learning. Have we not now a by-law declaring that member-colleges shall hereafter require of beginning students for graduation a course of instruction covering four full years of at least thirty-two weeks each; and another prescribing that our baccalaureate degree conferred upon the completion of the course shall be of such merit as to entitle the holder to admittance in full standing to the graduate school of any recognized university? Our first degree, henceforth the B.S. in Pharmacy, is now on a par with the A.B. or B.S. degree of any college in the country so far as our stipulated requirements are concerned. The American branch of the ancient and honorable profession of pharmacy, with a history of forty centuries behind it, has finally entered the kingdom of colleges. Galen we are here at last, on the educational mountainside to rejoin Law, Medicine and Theology, our old intellectual compeers, who had outstripped us!

It is customary for the mountain climber when he has scaled a height which he had to struggle to attain, first to make firm his footing and lift his eyes to catch a new and broader vision, before continuing upward. Let us, therefore, first obtain a firm footing on the prescribed four-year course before we proceed to ascend; which on being interpreted into plain language means that we should first translate our new requirements from paper to almost perfect performance before discussing seriously the question of the inauguration of a two- or three-year pre-pharmacy course; or of recommending that state boards demand that candidates for registration hold at least the Master's Degree before being admitted to examination. The past is behind us; the future before us; and we must not crucify to-day's problem between those two thieves of time, yesterday and to-morrow.

All honor to any college in the Association which experiments with a pre-pharmacy course, and all honor to any state board requiring the Master's Degree as a prerequisite to the licensing examination. The one may make a great educational discovery; and the other a valuable contribution to the profession. Experiments in education as in chemistry should always be made on a small scale and proved practicable before being accepted for a large scale operation. The four-year course has been the standard undergraduate course in American universities for several decades. Its improvement has not involved an extension of time, but a change in kind and quality. Our new four-year course will probably be our standard for several years to come. Its content and quality are now our chief concern. The immediate problem of the Association is not experimentation but the perfection of those essentials in education which we have obligated ourselves to carry into pharmaceutical instruction and which have been demonstrated by the experience of certain of our member-colleges to be superior to the old minimum requirements which we are all laying aside as inadequate. In passing from the three-year course to the four-year course we have increased the student's work thirty-three and one-third per cent. This means the obligation of the college has increased in an equal ratio. A larger faculty will be needed; and of equal importance is that the faculty must be better trained. The proportion of men with three or more years of graduate training should now be as great in the faculty of the college of pharmacy as in the department of chemistry or physics in the best colleges of the country. The dean will have to exercise more care than ever before in the selection of new instructors and in their promotion.

The teacher is of prime importance. What characterizes a superior teacher? Who can name all his attributes? Champlin reports the results of a questionnaire study of student opinion concerning the qualities of faculty men whom the students considered excellent professors. Here are some of the attributes which they ranked as of the greatest importance: "(*a*) being a good fellow in and out of class; (*b*) an authority in the knowledge of his subject; (*c*) a congenial companion; (*d*) an expert in the work of teaching others; (*e*) exceptional ability in self-expression; (*f*) just, impartial and sympathetic; (*g*) reasonable always; (*h*) eager to assist individual students; (*i*) appreciation of the student viewpoint; (*j*) understanding of human nature; (*k*) possessing a good name; (*l*) making a good appearance in public; (*m*) interest in personal problems of students; (*n*) known to be respectable in private life; (*o*) tolerant toward the opinions of colleagues and students; and (*p*) capable of intellectual growth." These opinions of students are worthy of adoption, but most deans realize that the genius possessing such splendid attributes will be difficult to discover. Holding these characteristics in mind the dean will probably want to know if the candidate for the position won a key in the honor society of his field, such as Sigma Xi, or gained his first degree with departmental honors. "Where he did his graduate work? What his professors have to say about him? Did he hold a fellowship? Did he take his doctorate *summa cum laude?* Under whose direction was the work leading to his thesis? Has his thesis or other contributions become noteworthy? What honors has he received? Does he excel in *one* or two of the following functions: (*a*) conduction of recitations; (*b*) laboratory supervision; (*c*) lecturing; (*d*) conduction of quizzes; (*e*) demonstration of experiments; (*f*) conduction of seminars; (*g*) administration, if head of a department; (*h*) research; (*i*) use of the library." After the dean has eliminated all but two or three candidates nothing will be of greater aid to him in making a decision than an interview with each.

Closely related to the appointment of faculty members is their promotion to higher rank when worthy. The dean and his advisors should formulate a definite policy for this important function. The following considerations in addition to the teacher's educational training may prove helpful: (*a*) outstanding success as a teacher; (*b*) constructive scholarship as shown by research; (*c*) organization of better educational policies; (*d*) the publication of constructive and meritorious literature; (*e*) interest in the general welfare of the students and attention to his obligations to the college; (*f*) the giving of technical advice or service in his field; (*g*) the length of time a teacher has served the college should have little or no weight; but the quality of his service should be the determining factor; (*h*) other meritorious qualifications. The nominations of the members of the teaching staff and the recommendations of their promotion are, of course, but a part of the many duties which the dean is called upon to perform but we cannot outline and discuss them all here. However, before dismissing the subject a few generalities from President Thwing will be appropriate. He believes the dean should seek to embody at least four elements or atmospheres: (*a*) he is to represent an intellectual altruism—an intellectual sympathy; (*b*) he must possess moral patience; (*c*) he must seek to be free from all blameworthiness; (*d*) he is to exercise the force of administrative constructiveness; he is to bear fruit; he must possess foresight.

Not only will the dean's duties be enlarged by our new program but every phase

of college activity will be influenced. It has occurred to me the adoption of certain standards as a rule and guide would prove helpful to us in the development of our member-colleges to that point where the degree B.S. in Pharmacy would be acclaimed without a superior in its class by the educational world. Before presenting these standards I should like to remark that I am fully aware that too severe standardization leads to stagnation but I also know that where there is no guide we lose our way and where there is no vision the people perish. I know further what is often accepted as a truism proves to be false in the crux of experimentation. For example, we once took it for granted that better instruction could be given a small class than a large one. However, in an article in the *Journal of Higher Education*, Professor Hudelson informs us: "In four experiments out of every five the large classes have excelled the small in achievement. In only one out of every twenty experiments has there been a distinct advantage to students in small classes. At every level of intelligence and at every level of scholarship, both men and women in large classes tend to outstrip their mates of the small sections in examinations and marks." Thus we see that the predominance of experimental evidence disproves the expressed conviction of most educators that small classes are a necessary mark of educational efficiency. We see, too, that standards must be established upon facts and not on personal opinion and when so founded they lead to achievement.

Every successful organization formulates and enunciates a set of principles for its guidance. The theocracy of the Hebrews was founded upon the Ten Commandments. The modern church has its creed; the government its constitution and laws; the fraternity its rules and ritual; society its customs no less rigid; the home its peculiar regulations; and even the political party has its platform. From time to time the Association has adopted recommendations from presidential addresses and reports from the Committee on Higher Educational Standards, the Committee on Curriculum and Teaching Methods, and from many special committees embodying important factors in pharmaceutical education; but a large number of them could not expediently be incorporated into the By-Laws.

President D. B. R. Johnson in 1927 recommended that "a committee of five be appointed to begin the classifications of the schools." During the same meeting the Association received the report of the Committee on Standards and Classification of Colleges, recommending that "steps be taken to classify the colleges at the earliest possible time" and expressing the opinion that a committee from our own groups should be appointed to visit and study the conditions existing in member-colleges. "In this way," said the Committee, "we can then arrive at some just and definite standardization of the schools." The Association at that time felt the financial burden would be too great for us to assume.

Many of us remember the discussion of the question "Are the Standards of the A. A. C. P. Adequate for State Board Recognition?" lead by Dr. Robert P. Fischelis in which he said: "With the exception of a few general requirements, no standards have been specifically set down for the admission of schools to membership in the Association. Some states have enacted legislation which provides for approval of the education of graduates of colleges of pharmacy holding membership in the A. A. C. P. I could not conscientiously recommend the enactment of such legislation in our State." Dr. Fischelis, after making many helpful ob-

servations, concluded his remarks by saying: "Now a final word in answer to the question conveyed in the title of this discussion. I would answer it in the negative but I would immediately qualify that answer by stating that in all probability in the majority of the schools holding membership in the Association, their own standards are more than adequate." He thinks our standards should be formulated and published in full.

We can partly gage the importance of standardization when we recall that President J. W. Sturmer last year submitted but a single, definite recommendation, namely, "That a committee be appointed to study our membership requirements and to prepare a way for such changes in our standards as may be deemed necessary for the best interests of the future of pharmacy." This recommendation was approved and adopted. The committee has been appointed.

Our greatest need as we enter into the kingdom of colleges is the establishment and the declaration of the standards of the Association; so that we ourselves may have a clear understanding of our own educational policy and system of principles; and so that the representative appointed by the Executive Committee to visit a member-college may have a comprehensive view of his duties. I have, therefore, prepared some proposed standards and wish to submit them with the following recommendations:

I. That they be referred to the Committee on Higher Educational Standards, on Membership Standards or Council on Pharmaceutical Education, or a special committee as may be deemed best by the Committee on Resolutions, for consideration and report.

II. That a special session of the 1933 meeting of the Association be set aside to receive the report and to discuss it.

III. That when we shall have agreed upon the standards for this Association that they be published annually immediately following the By-Laws in the Proceedings.

The approval of the first recommendation will provide for a central body to which each of us may address his suggestions of modification or concurrence. The second recommendation is made because the adoption of standards for this Association is too important to be disposed of in haste, and because the present meeting will, of necessity, be one session less than usual. The acceptance of this recommendation will give us a year in which to study the standards and to decide judiciously upon the merits of each. The third recommendation is made in order that the standards may at all times be readily available not only to us but to state board members and other interested bodies.

Some of these suggested regulations have been taken unchanged from the pages of the Proceedings; others have been expressed in terms becoming the concepts of modern education. A number of them as they now stand is the result of amendments, additions and suggestions by the several deans and professors of our member-colleges who were kind enough to comment upon the original list. I am also indebted for certain others to college presidents and deans of schools of education. Especially am I obligated to President Cowling of Carleton College and the Association of Colleges and Secondary Schools of the Southern States and to a less degree to other educational associations, general and professional.

THE PROPOSED STANDARDS.

I. Requirements for Admission. The requirements for entrance to a college of this Association are set forth in the By-Laws.

II. Requirements for Graduation. The requirements for graduation are succinctly expressed in the By-Laws, to which should be added moral character and subscription to the code of ethics of the A. PH. A.

III. Requirements for Catalog Contents. Definite statements, covering such information that shall appear in the current catalog or bulletin, are given in the By-Laws.

IV. Curriculum Requirements.

1. The curriculum extends over a period of four years of approximately thirty-six weeks (never less than thirty-two) each, with a minimum of five full school days per week in accordance with recognized academic procedure.

2. The curriculum required for the baccalaureate degree consists of a minimum equivalent of 124 semester hours; not more than eighteen of these hours should be scheduled in the obligatory curriculum in a single semester.

3. The curriculum includes physical training, basic, cultural and professional subjects in keeping with the adopted reports of the Committee on Curriculum and Teaching Methods and the latest edition of the Syllabus.

4. Each hour of recitation requires on the part of the average student two hours of preparation. Three hours of strictly laboratory work, or two of laboratory with one hour of correlated reference or written work, are equivalent in value to the time required by the student to prepare and accomplish one hour of recitation.

V. Educational Qualifications of the Faculty.

1. The training of the head of a department should be that represented by at least three years of correlated graduate work in a standard institution, in the field in which he is to teach; or should represent a corresponding amount of technical or professional training. Successful teaching and administrative experience also should be required.

2. Professors, associate professors and assistant professors should have a training which includes at least two (preferably three) years of study in their respective fields of teaching in a standard graduate school; or an equivalent amount of professional training.

3. Instructors should possess at least the training represented by the Master's Degree in their respective fields; and should they be inexperienced at the time of appointment their instruction for the first year should be systematically supervised; instructors of unusual talents may be excepted.

4. At least 60% of the professorial staff down to and including assistant professors should hold a doctor's degree representing as much as a seven-year course of study and research. Not less than 60% of the faculty teaching pharmaceutical subjects should be registered and experienced pharmacists.

VI. Academic Regulations for Teachers.

1. Teachers may be expected to teach a maximum of sixteen clock hours per week. One clock hour of laboratory supervision is counted on the same basis as a clock hour of regular class-room instruction.

2. About 40% of the total number of actual teachers should be full professors and the remainder distributed about evenly among the other ranks. It is assumed that no one will be employed in the work of teaching whose rank or qualification, or salary is below that of an instructor, fully recognized as a member of the faculty. "Assistants" with special aptitude and training will be allowed to help with the simpler work of the department.

3. Teachers should be asked to carry only a minimum amount of administrative work. The purpose of this provision is to enable each teacher to devote himself without handicap to the work of his department. It is, therefore, desirable for a college to make adequate provision for administration expenses separate from direct expense for teaching. In cases where administrative officers, such as deans or registrars, also offer instruction, a corresponding portion of their salaries should be charged to salaries for teaching, and when regular administrative duties are assigned to teachers, a corresponding portion of their salaries should be charged to administration salaries.

4. Teachers should be encouraged to maintain genuine interest in productive scholarship in order that their teaching may be kept fresh and vigorous. The expense of a limited amount of such work, which can be carried on in connection with the regular work of a department, may be charged properly to "Departmental Expenses." In cases where important pieces of separate research work or related enterprises are carried on, the expense of such undertakings should not be included in the current educational budget but should be provided for separately. Publication of meritorious, original work from time to time and participation in professional meetings as well as a high type of teaching indicate a superior faculty; but the chief duty of a teacher is to teach students.

VII. Salaries. The average salary paid to members of the faculty of a given rank is of importance in determining the standing of a college. The salary of a full professor should not be less than $3000 for the academic year. The salaries for other ranks of the instructional staff should be gaged accordingly.

VIII. Number of Students in Class and Laboratory Sections. Though recent experiments have indicated that large classes generally excel small classes in achievements when both are taught by lecture or demonstration, the size of such classes should be held within the limits of clear vision and distinct hearing. However, a quiz class consisting of more than thirty students or a laboratory section of more than 25 should be interpreted as endangering educational efficiency.

IX. Financial Support. The financial status of the college should be judged in relation to its educational program. For a college of approximately 100 students, offering only the four-year course, the annual income

should be not less than $35,000 and if not tax supported should have an endowment of not less than $350.00.

X. Laboratories. The number, size and condition of the laboratories should be of approved standards and in keeping with the educational program of the college. The laboratory equipment should be kept replenished or increased by means of an annual appropriation adequate for all the experiments required, according to recognized standards, not only for the scientific and professional courses catalogued in the obligatory curriculum, but for all announced in the annual bulletin.

XI. Library. The library should be in charge of a professionally trained librarian, and should be open not less than ten hours every school day. At least, 6000 volumes should be easily available to the students, as well as the leading periodicals bearing upon the field covered by the curriculum and also those of general interest. The kind of books in the library is of more importance in determining its rating than merely their number. The catalog should be of the approved type. Freshmen should receive instruction in the use of the library. The building should be well lighted, ventilated and protected against fire and have suitable quarters for the staff. The reading room should accommodate not less than 16% of the student body. For a college with a minimum number of departments and about 100 students the average annual expenditure for the library should be at least $1500 exclusive of salaries and the maintenance of the building.

XII. Extra Curricular Activities. An important test of a standard college is that it, or the institution of which it is a part, exercise proper administration of fraternities, entertainments, athletics and all other extra curricular activities. The fostering of a student branch of the A. Ph. A. or a student pharmaceutical society indicates that the spirit of the profession extends beyond the class room.

XIII. Material Equipment in General. All the buildings of the college should be suitably located and constructed, and sufficient in number and ample in size for the best type of instruction. The ventilation, lighting, heating and sanitation should be of a type approved by experts in those fields.

XIV. The Spirit in General. The educational policy of the administration, including the thoroughness of its scholarship, the purpose of the curriculum, the scientific spirit, the soundness and inspiration of the instruction, the kind of publicity, the qualifications for graduation, the conservatism in awarding honorary degrees, the tone of the institution including the students as well as the faculty shall have an important bearing in determining the standing of a college.

XV. Relation to the Educational World. All subjects offered for the baccalaureate degree shall be of collegiate grade and the college shall be able to prepare its students to enter standard graduate schools as candidates for advanced degrees.

XVI. Classification of Colleges. Beginning July 1, 1935 the member-colleges of the Association shall be classified as follows:

1. Colleges making a rating of x per cent or more of this list of standards in toto, and not less than y per cent of twelve standards selected by the college shall be classified as Grade A.

2. Colleges making a rating of not less than z per cent and up to x per cent in toto, and not less than u per cent of twelve standards selected by the college shall be classified as Grade B.

3. All other colleges shall be classified as Grade C.

It is, of course, the privilege of the Association to establish the value of x, y, z and u.

The Constitution of the United States, which Gladstone termed "the most wonderful work ever struck off at a given time by the brain and purpose of man," would not have been such without many alterations and compromises on the part of those who framed it. Neither can our standards be helpful and stimulating to pharmaceutical education unless they are adjusted to our need and purpose. Bryan has said that the best thing about the Constitution is that it can be amended. It may be that the best thing about the suggested standards is that they can be modified before becoming the standards of the Association. Should the Association consider it advisable that these standards be accepted as an ideal to be reached instead of regulations to be altered to meet our best interest, it will be satisfactory to me, provided we publish them as they are, or in a modified form in the Proceedings as the goal to be attained by all. It has been said that the giraffe acquired its long neck by reaching up for its pabulum; just so the Association may lengthen its educational neck by reaching up for its standards.

THE DOCTOR'S DEGREE.

There is another question touching the standards of the Association to which I wish now to direct your attention. In the Proceedings of the Association, 1931, Article VII, By-Law 6, Paragraphs 3 and 4, we find the following statements:

"The degree of Master of Science in Pharmacy (M.S. in Phar.) may be given upon the completion of not less than one year of graduate work. Graduate work shall be interpreted to mean work done after the completion of the requirements for the baccalaureate degree."

"The degree of Doctor of Pharmacy (Phar.D.) may be given upon the completion of not less than three years of graduate work."

Therefore, it is a violation of this By-Law, as printed, for a member-college to offer the degree of Doctor of Pharmacy for six years of work since the degree of Bachelor of Science in Pharmacy, our baccalureate degree, requires the completion of not less than a four-year course and the doctor's degree three additional years. Yet in order to confirm my interpretation of this By-Law I requested the Chairman of the Executive Committee to render me his decision. His reply is as follows:

"Your interpretation of the Constitution and By-Laws *as they stand to-day* concerning the Doctor of Pharmacy degree is, I think, correct. May I point out, however, that when the clause, 'the degree of Doctor of Pharmacy (Phar.D.) may be given upon the completion of not less than three years of graduate work,' was adopted, it was with the understanding that graduate work meant work after the completion of the degree of Graduate in Pharmacy as outlined in the first paragraph of Number 6 of Article VII of the By-Laws. Later we adopted the statement,

'Graduate work shall be interpreted to mean work done after the completion of the requirements for the baccalaureate degree,' and failed to make any change regarding our statement of requirements for the degree of Doctor of Pharmacy.

"It is not unusual that such things happen when By-Laws are amended by piecemeal. I distinctly remember when Dr. Rusby brought in his report on degrees and we accepted his requirement for the Phar.D. Degree, believing it was much better than the requirement we had at that time. In fact, there was no requirement concerning this degree and any educational institution that wished, even though it was a member of our Association, could offer the degree for any amount of work that it saw fit to demand. Naturally, I remembered the conditions under which the Phar.D. Degree was more or less standardized and, therefore, said that it could be granted after a period of six years."

It is, therefore, evident that this portion of the By-Laws has been printed incorrectly and that our standards are not so high as the wording indicates. A review of the Proceedings shows that this part of the By-Laws was first printed wrong in 1925 and has appeared uncorrected in the six succeeding editions. The inaccurate statement which has stood for so many years should be declared correct, for by so doing pharmacy would be placed on a par with chemistry, physics and other subjects requiring seven years for the doctorate.

Moreover, the title, Doctor of Pharmacy, has suffered greatly by free and easy use. This degree has been conferred by correspondence schools, has been awarded after a two-year course by bona fide colleges in years not long past, and has been and is now conferred as an honorary degree. What is its distinction, what is its significance to-day? At times it is synonymous with profound scholarship; it is the doctorate of some of our leaders. At other times it is held by men who have had only a short course of study. For a long time in America the LL.D. Degree has been recognized as an honorary degree and the J.D. as an earned degree; the D.D. Degree as honorary and the Th.D. as an earned degree. Is the Phar.D. Degree going the way of its old associates, the LL.D. and the D.D. Degrees, now conferred only *honoris causa*, or will it, like the M.D., not only survive but grow in significance as an earned degree? I cannot tell; but this I do know, that the degree of Doctor of Philosophy has an educational standing second to none. Pursuant to the preceding discussion I therefore submit the following recommendation:

> IV. That Article VII, By-Law 6, Paragraph 4, now incorrectly printed "The degree of Doctor of Pharmacy (Phar.D.) may be given upon the completion of not less than three years of graduate work" be amended to read "The degree of Doctor of Philosophy (Ph.D.) or Doctor of Pharmacy (Phar.D.) may be given upon the completion of not less than three years of graduate work, making a total course of seven years of undergraduate and graduate work."

PRACTICAL EXPERIENCE.

Another question relating to standardization and to which this Association has given much consideration and discussion as revealed by a study of the Proceedings is the one relating to practical experience as a prerequisite to the licensing examination. You will recall that in the first part of this address I referred to an

early, now long-defunct conference which preceded our present organization by thirty years and which refused admission to the Department of Pharmacy of the University of Michigan because it did not require four years of practical experience for graduation.

Dr. J. P. Remington in his presidential address of 1902 declared: "The greatest question confronting the pioneers was the necessity of proving the value of college education for apprentices." Later in his remarks he said: "Now the knowledge acquired by drug store experience has not even the semblance of order or system, is acquired hit or miss just as people come into the store and inquire for what they want. Six years' apprenticeship in the old-fashioned shop was formerly the only way to study pharmacy," and he goes on to say: "A student who carefully follows the instruction will certainly acquire more sound knowledge of the essential facts which lie as the foundation of pharmacy, in three years at college than one who has spent his time exclusively in the store for twenty years, gathering knowledge on the installment plan." It would be interesting to know what Remington would have to say about practical experience compared to modern pharmaceutical education!

Dean Clair A. Dye has reported to this Association the data representing the experience of 150 students who had worked in a store from four months to ten years. Contrary to his idea at the time he sent out the questionnaire he concluded from the general statements that many did get some practical experience that was worth while and told us: "If we can direct and supervise it—then I am in favor if it." Dr. Mansfield declares: "Much of this opposition (to the elimination of practical experience) is doubtless based upon the fact that it is economically desirable to have unskilled, inexperienced, cheap help to do the menial tasks about the store." Later he refers to it as "time requirement" and believes we ought to "do away with practical experience entirely or standardize such experience." Mr. Walton says: "That boards exist to assure the public that the persons who compound and dispense medicines are competent and qualified to do so. They do not exist to assure any person that he will be a success in a business way." He sees no more reason why the grocer should not be examined as to his ability to conduct his business in a commercial way than the pharmacist. Dean Rudd reports that during the discussion of the pharmacy bill on the floor of the Senate in his state one of the leaders of the Senate said: "We will kill that bill if you leave the experience clause in there. If you fellows that spend the state's money can't teach the students sent to you and train them for pharmacists, we will kill the bill." W. D. Jones, an outstanding pharmacist, and a retailer of years of experience writes: "The school that assumes that the graduate will complete his knowledge in the art of pharmacy after he enters his practice, is, in my opinion, assuming a false premise. The fact is the graduate will receive very little real training in the art of pharmacy in the great majority of the drug stores that he may enter."

Professor N. T. Chamberlain presents another phase of the subject by saying: "However, agreed as we seem to be upon the usefulness and worth-while training of practical experience as a prerequisite to registration, it appears that we are not agreed upon WHEN, WHERE and HOW this experience shall be gained. Is it to be gained before entering college, during the college course or after gradua-

tion? Is it to be gained in any type of so-called drug store, ranging from packaged nostrum and novelty type to the exclusively professional type? Is it to be gained under a standardized system in charge of inspectors appointed by the state board of pharmacy? Is it to be directed by a pharmacy college? Or is it to be regulated by a professional society organized for the purpose of furthering the interests and ideals of professional pharmacy?"

Some states require no practical experience, others one, two and three years, respectively. What is right? None, that I know of, requires supervision. Should not the Association make a pronouncement on this important subject so closely related to pharmaceutical education? We cannot change legislative enactments; but a declaration by this body will have a great influence on those who make laws and regulations.

V. I recommend that the Committee on Council on Pharmaceutical Education be requested to make a thorough study of this question, and report its findings and recommendation to the Association.

In conclusion let me first suggest and request that the committee reporting upon the President's address consider it in connection with the recommendations of the Association's committees whose members have put effort and study upon the specific tasks assigned them during the year.

Then, finally, I wish to thank you for the honor you have bestowed upon me and say that during the year now closing I have learned more about the Association than in all the other years combined. Page by page I have read the Proceedings. As my eye traveled down the highway of written lines I have learned the innermost thoughts of our great teachers standing along this Appian Way of Pharmacy. This year they have been my teachers and made me glad that I, too, am a teacher.

PROPOSED HOLLAND LEGISLATION.

The Dutch Government has laid before the Second Chamber a bill to revise the pharmacy law of 1865, which, despite various subsequent amendments and additions, has now become out of date and unsatisfactory for the control of the business, particularly as the position of the pharmacist has changed in recent years, chiefly owing to the industrialization of manufacturing, under which he has become more and more a supplier of articles made in chemical works than being himself a producer of them.

The so-called C list, which was introduced in the past to place a limit on the competition offered by druggists, is no longer to be maintained. In place of the C list the second clause of the bill proposes definitely to regulate what particular articles may be sold by non-pharmacists. In this respect the preamble points out that both pharmacists and druggists will best be able to develop their respective businesses if they each remain on their own ground, while at the same time it is not considered advisable to place on the independent trade more bonds than are strictly necessary.

The bill, which deems it undesirable for the druggist branch to be legally regulated, rejects the demand which has frequently been made by pharmacists that pharmacies should only be carried on for personal account. Such a regulation, it is submitted, is considered undesirable, as it would prevent companies or partnerships from engaging in the pharmacy business; and only in very special cases will a departure be made from the rule that a pharmacist must have the responsibility for only one pharmacy.

Having regard to the constantly growing trade in packed products, the bill provides that the State administrative department concerned with supervision by a general measure can veto the introduction into the open market of any packed specifics or medicines which may be considered to be injurious to health; and the public advertising of definite packed products as being adapted to cure, alleviate or prevent illness can also be prohibited.

ADDRESS OF THE PRESIDENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.*

BY A. L. I. WINNE, PRESIDENT.

Mr. Chairman, Members of the National Association of Boards of Pharmacy, Our Canadian Guests and Visitors:

I appreciate the privilege of greeting you at this, the twenty-ninth annual meeting of our Association, in the great Canadian convention city of Toronto. I appreciate the distinction of presiding at this, our first annual gathering, held anywhere outside the United States, and the first in which we have the pleasure of the presence of any appreciable number of gentlemen of another nation engaged in similar work to our own.

To our Canadian guests I extend a most cordial welcome. We are happy to have you with us, glad of the opportunity to hold our meeting in a friendly and hospitable neighboring country, and we want to express our thanks to you for extending the invitation to us to visit with you for the few days we are in session, and for the privileges of mingling with you and of sharing with you in the mutual exchange of viewpoints. We extend to you the privileges of the floor and will welcome your comments on matters which may come before the body for discussion.

A. L. I. WINNE.

We are all going to profit greatly by this joining together in our deliberations. We will each gain a greater understanding of the educational system and the licensing procedure of the other country. That we, who have come over the lines from the States, for a few days' sojourn in your midst, will not only profit by the visit, but that we will not fail also to take note of the pleasurable opportunities such a visit affords, goes without saying.

Turning from the extension of welcome, we come to the more matter-of-fact discussion of the affairs of the organization. In taking up the several topics I have tried to pay regard to brevity, and have only partially succeeded. I have consideration for those who sit and listen, and yet I feel that a reasonably full presentation should be made of the thoughts which attach to the matters discussed. I have, in most instances, compromised by leaving unsaid much that might have been included.

ASSOCIATION AFFAIRS.

Annually it has been customary for the presidents of this Association to comment on the affairs of the Association. The comment has usually briefly referred to the financial condition of the body, and then has devoted itself to taking note of the

* Toronto, Canada.

progress made during the year that had passed. It has been the privilege of most of my predecessors to come before you with paragraphs of assurance that all was well. It is, therefore, somewhat reluctantly that I feel I should at this time inject comment that must of necessity be a little different in its tone.

The finances of the organization are not at present in a particularly healthy condition, and I feel that this important matter should be discussed.

In looking back over our proceedings, for a period of five years, I observed that in 1927 the president reported that the affairs of the Association were in a healthy and prosperous condition. He was correct in that observation.

In 1928 the president reported the affairs of the Association in excellent condition, but he took note of the fact that the income at that time was below the expenditures for the year that was then closing; but he did not regard this as a serious matter, observing that our income varied from year to year.

In 1929 it was noted by the president that for the past few years expenditures had exceeded income. The budget of the organization, he stated, was to him a matter of serious thought, in view of the trend he then observed.

In 1930 the report of the president covered only a nine-month period, and the president observed that for the first time in four years income and expenditures practically balanced for this short period. He felt that the organization had weathered the storm.

In 1931 the president observed a small loss, attributed by him to extra activities of the Association. The income of the organization for 1930 and 1931 had been exceedingly good, and the president last year felt that it had been conclusively proven that the organization could definitely count upon a substantial income from reciprocity.

We have found during the past year that this assumption is erroneous. The receipts from reciprocal applications have fallen far short of the several preceding years, and the organization has again suffered a cash decrease to an amount approaching, if not exceeding, $3000.

I feel that the time has come for us to seriously consider our financial condition. If you will bear with me for a little more delving into the records for the past five years, I may state that an examination of the secretary's reports for this period shows that at the beginning of our fiscal year in 1927 the secretary had a cash balance of $9922.94. In 1927 he reports receipts of $18,927.49, and expenditures of $21,405.89. This indicates a decrease in his cash balance of $2478.40 for the year.

In 1928 the receipts were $17,806.13, and expenditures $20,356.91, with another decrease in his balance of $2550.78.

In 1929 he reports receipts of $18,172.40, and expenditures of $18,794.26, showing a decrease of $621.86.

In 1930 he reports receipts of $16,966.05, and expenditures of $17,000, even, showing a decrease of $33.95.

In 1931 he reports receipts of $29,474.64, with expenditures of $31,042.44, showing a decrease of $1567.80.

The total decrease in the cash balance in the hands of the secretary for the five-year period amounts to $7252.79, leaving him with a balance at the end of the period of $2670.15. The above figures are not particularly significant, except that they indicate a trend. These figures are merely the record of the money passing

through the hands of the secretary, to the treasurer of the Association. The fact that his cash balance gradually decreased would indicate that there has been a necessity to convey to the treasurer amounts in excess of our receipts.

Of more importance to us are the figures carried in the annual reports of the Executive Committee. In 1927 this committee reports receipts of $18,049.74, and expenditures of $20,734.25, showing a deficit of $2684.51.

In 1928 receipts were $17,236.13, expenditures $21,209.85, showing a deficit of $3973.72.

In 1929 receipts were $17,484.40, expenditures $18,562.52, showing a deficit of $1078.12.

In 1930 receipts were $21,275.14, expenditures $21,176.41, showing a gain for that year of $98.73.

In 1931 receipts were $23,053.10, expenditures $24,002.94, showing a deficit of $949.84.

The net loss over this period of five years, as shown by these reports, amounts to $8587.46.

More significant than the above figures are the following: Under date of June 30, 1926, the Net Worth of the association was stated to be $24,765.81. On June 30, 1931, the Net Worth is stated to be $17,726.17. There is indicated a loss in the assets of the organization of $7,039.64, or an average loss of almost $1200 a year in the six-year period covered. These figures include the office equipment, books and other incidental inventory items which are not reflected in the cash balance items. For the purpose of comparison, I would also like to include the budget figures for the five-year period. There was appropriated for the use of the Association during the fiscal year ending in June 1927, $21,542.50; in 1928, $20,372.50; in 1929, $20,487.50; in 1930, $19,502.70; in 1931, $19,832.70. In addition, $3500 was spent in the publication of bulletins of the Department of Education during this period, covered by a separate appropriation.

I believe that with these figures before us, and with the report from the Executive Committee this year showing the trend still in a downward direction, that the Association should recognize the fact that we have been living beyond our income, and that retrenchment appears to be a matter of necessity. Just where this retrenchment should be made is for the Executive Committee to decide. I feel sure that this committee will need your counsel and will welcome it in arriving at a solution of the problem. The secretary realized the necessity for economy some months ago, and without any action of the Executive Committee, he and his associates voluntarily put into operation a salary reduction of 10%. This action is commendable, but it falls short of offering a complete solution to our difficulties. Other economies must be practiced if the organization is not to gradually use up all of its reserve fund. We have been compelled to make inroads on this reserve, in order to meet current obligations, and this practice, while a convenience from time to time, should not be a policy of the organization. Its continuance much longer, under present conditions, will entirely wipe out our reserve fund and reduce the activities of the Association to the point where it will be difficult to function satisfactorily.

While I feel that it might be a prerogative of the president to make recommendations with reference to just how these problems should be handled, I prefer to

confine myself to suggestions, as we have an Executive Committee charged with that duty. I do suggest that serious consideration be given to a cessation of the extraordinary activities which the Association has undertaken, until such time as our financial condition will warrant resumption of these activities; and that such contributions as the organization has customarily been making to outside activities be discontinued in all instances where we are not obligated to continue the contribution.

Article 2 of our Constitution states the object of this organization to be the "promotion of interstate reciprocity in pharmaceutic licensure, based upon uniform minimum standards of pharmaceutic education and uniform legislation, and to provide the standards of pharmaceutical education and licensure by coöperating with state, national and international agencies, and associations having similar objects." I take it that these objectives should be our first consideration, and certainly the major activity of this organization is the promotion of interstate reciprocal licensure in pharmacy. There should be no abatement in our activities in the promotion of reciprocity nor in the sphere of rendering a direct service to member boards. These objectives should come before other considerations. I realize fully that an organization should continue to make effort to increase its usefulness, but it seems to me that there come times, such as the present, when it is expedient to stop and take stock of where we stand, consolidate the ground we have won, and make sound preparation for the next steps we contemplate taking. This organization has every reason to feel proud of its past accomplishments, and I believe that in the future its record will merit equal commendation, but I also believe that we should measure our activities in accordance with our financial ability to execute them.

I may here mention that in the interest of economy no meeting of the Executive Committee was held during the past year at the Chicago office. While such a meeting might have served a useful purpose it was not felt that there was sufficient necessity to warrant the necessary expenditure, and the only meeting of the committee held since our last annual convention was that of a day or two ago in the city of Toronto.

RECIPROCITY.

The subject of reciprocity has been so thoroughly discussed in the presidential addresses of this organization and in the reports of the secretary, that I deem it unnecessary at this time to go extensively into a further discussion. We have been reasonably successful in the working out of a satisfactory system of reciprocity, and this has been due to a willingness on the part of most states to make the necessary concessions, and to not adhere too drastically to arbitrary ruling. In almost any instance an applicant for reciprocity might be barred through resort to technicalities. The whole system is one of the application of common sense.

A stricter adherence to the rules may reasonably be expected in cases of our more recently registered pharmacists, but for the older men applying to us for reciprocity we should show considerable consideration, as few of these were registered under rules and regulations similar to those obtaining to-day. To hold them to a strict accountability under present conditions amounts to a retroactive application of our rules and our laws. It has been with reference to situations of this kind that the annual plea for tolerance has appeared in our proceedings.

It is probably true that the laws of most states give the boards of pharmacy the widest kind of latitude and ample opportunity for the exercise of discretionary power. Few of these laws specify the qualifications for reciprocal registration in other than general terms. It is usually through arbitrary rulings, and sometimes through misunderstanding, that reciprocal registration is denied to many applicants who probably should be registered.

Occasionally a situation develops in one of the states where the trend appears to be all in one direction. These states find themselves besieged with applicants who want to come in, and at the same time they observe that very few of their own pharmacists are desirous of leaving the state and registering elsewhere. They apparently come to the conclusion that reciprocity is not a balanced procedure, and in some instances they attempt to set up barriers which are almost insurmountable; and in a few instances consideration has been given to a cessation of admission of pharmacists into the state on the basis of reciprocity. I can appreciate that under present economic conditions, with many pharmacists unemployed in their own states, that a certain amount of unrest has developed, and that there have been many instances where pharmacists, in a desperate effort to find employment, are resorting to trying to secure reciprocity in states where they think they may find work; and I can likewise appreciate the feeling of the board of pharmacy in any state that such opportunities for employment as may arise, should be open to their own unemployed pharmacists. The situation is not a pleasant one, and a decision as to how it shall be best disposed of is not easily arrived at. We should bear in mind, however, that although many of our laws are working very poorly the law of supply and demand is still working smoothly. In a very large majority of the cases where applications for reciprocity are presented, the applicant has a tangible idea of where he will secure employment if he is granted a license. In most instances the applicant has already secured a promise of such employment, and boards of pharmacy should weigh this question very carefully before arbitrarily denying registration.

There are, of course, many attendant factors which must be taken into consideration. The past record of the applicant, his moral character, his experience, and other considerations in addition to his education and his registration grades, may be, and should be, carefully investigated.

I call attention to this phase of reciprocity, as it has been given serious consideration in several of the states recently. I would likewise like to point out that where a state considers the suspension of granting the reciprocal right to applicants from other states it of necessity deprives the pharmacists of its own state of the right to apply for reciprocity outside that state. The secretary of such a board of pharmacy could not consistently subscribe to the obligations carried in our application form in certifying for reciprocal purposes to the grades of a person registered by his board. The system of reciprocity cannot hold up and cannot be successfully conducted if here and there boards are going to arbitrarily discontinue the granting of reciprocal registration.

LEGISLATION.

A little later on our program the Association will hear the reports of the Legislative Committee and the Committee on National Legislation, and the secretary's

report will undoubtedly briefly cover this subject. I will therefore pass over any detailed comment on the activities in the legislative field during the past year. My purpose in mentioning legislation at all is to direct the attention of such states as contemplate making changes in their pharmacy law to the fact that this organization has prepared and holds available for any state board of pharmacy a draft of what is designated a Model Pharmacy Law.

There have been numerous instances where a copy of this model law has been very useful to states undertaking a legislative program, but apparently there has likewise been a misunderstanding of the purpose meant to be accomplished in the preparation of this model act. In some quarters it is apparently assumed that the model law was drafted as a substitute in toto for the existing pharmacy law of any particular state. That decidedly is not the end sought to be accomplished. The scope of the Model Pharmacy Law is such as to embrace practically every phase of pharmaceutical legislation. It has been carefully considered with reference to its phraseology and to its terms, and it serves its purpose admirably in any state contemplating a revision of any particular phase of its pharmacy law.

The sections of the model law are so drafted that they can be lifted from the body of the bill itself and utilized as sections for inclusion in the pharmacy law of almost any of the states, without offering serious conflict to the adjacent sections of the state law. States contemplating making changes in their pharmacy law would do well to secure a copy of the model law and shape their proposed amendments in accordance with its terms. This does not necessarily mean that the model law must be followed in a verbatim way. In many instances its sections could be somewhat modified to suit local conditions, and still prove helpful to those undertaking new legislation. The Chicago office of the N. A. B. P. holds itself ready at all times to offer suggestions, make criticisms, and otherwise be helpful to the states in promoting their legislative programs.

DISTRICT MEETINGS.

During the past year we had joint district meetings in six of our nine subdivisions. These were District No. 1 at Boston, District No. 2 at New York, District No. 3 at Cleveland, District No. 4 at Cedar Rapids, Iowa, District No. 6 at St. Louis and District No. 7 at New Orleans. All these meetings are reported to have been well attended, and that great interest was displayed in the proceedings. It was my privilege to attend only one of these meetings, that held in New York. The program at this meeting was very interesting and the meeting was largely attended, as those in District No. 2 always are. In my own District No. 5, although considerable effort was put forth to hold a meeting, the effort was abandoned because we could not get assurance of representative attendance. In two other districts no meetings were held. These were Districts No. 8 and No. 9. These two districts cover most of the western part of the country, where states are large and distances are great, and undoubtedly the reason this year, as in the past, for not holding such district meetings has been the consideration of the cost involved. The board members and faculty members do not have the funds at their disposal to attend such meetings.

In connection with the above situation I have the feeling that we should as far as possible get back to our former methods of contacting the boards in the states

which do not seem able to hold district meetings and which do not regularly send delegates to our national meetings.

In the earlier days of this organization it was customary for the secretary of the organization to visit these states, preferably when their state boards were holding sessions, and to personally contact the members; and to observe their examination methods, to offer such advice as was acceptable to the boards; and to generally confer with them about matters of educational standards, examination questions and reciprocity. Our activities during the past few years have been such as to consume a great deal of the secretary's time in attending to affairs which are perhaps not strictly association objectives. In other words, I believe that it is important that we get back to some of our first objectives, even if we must, to a certain extent, slight some of the more recently acquired activities. I believe that it is just as important to-day that this Association keep in close contact with those states, that for any reason may not be able to send delegates to our national or district meetings, as it was in former days. We have neglected this activity in recent years and there has consequently appeared in some of these states a certain amount of misunderstanding of N. A. B. P. work.

This can undoubtedly be attributed to the fact that there are constant changes taking place in the personnel of many of the boards. In some instances entirely new boards are appointed. It is practically impossible to convey the viewpoint of the organization to those new members by correspondence methods, and if our secretary could visit with such new board members or newly appointed boards I feel sure that many of the points of misunderstanding could be cleared up and a more cordial coöperation could be expected.

We also occasionally have some points of misunderstanding with boards in states which do attend this organization. There appears to be from time to time some misunderstanding on the part of some of the members with reference to standards adopted by the organization, and particularly with reference to the attitude of some other member boards with regard to points involved in reciprocity. Generally a board of pharmacy must consider an application for reciprocity in the light of the laws of its own state. These may differ in some respects from the laws of the state from which the applicant comes, and it frequently is a matter of disappointment, and sometimes of strong feeling, when an applicant fully qualified in one state is not granted reciprocity in another.

In some of these instances the standards of the N. A. B. P. are held responsible. This attitude on the part of any state is not well founded. The standards of the N. A. B. P. are merely the set of rules adopted by a majority of its members for the guidance of the several state boards. These rules, be they constitutional articles or by-law sections or adopted resolutions, have only the weight of being suggestive and advisory. They in few instances have the weight of law.

It is true that where a number of boards subscribe to the constitution and by-laws of an organization, such as this, they assume a moral obligation to abide by these, but this obligation only reaches to the point of where these rules do not conflict with the laws of a particular state. For this reason there should be a greater understanding of the objective of this organization, or the extent to which its rules are binding upon the member board; and an appreciation of the fact that the laws of the various states differ in many details, and that the boards of the

individual states are bound first, by the laws of their own state, and secondly, by the rules of this organization; and that often these boards are powerless to comply with conditions which entirely meet the legal requirements of another member state, from which an applicant for reciprocity may come. In other words, to use a term which has almost become hackneyed by its employment in the annual addresses of presidents of this body, there must be a considerable amount of tolerance if reciprocity in pharmacy is to continue a successful procedure; but in addition to tolerance there must also be sound understanding. For this reason I believe that as ample provision as we are able to make should be made for our secretary to make such trips as are possible to member boards, to personally confer with them over such misunderstandings as arise from time to time.

REDISTRICTING.

By virtue of a by-law of this organization, the United States is divided into nine districts. Each district is composed of a certain number of states, more or less geographically adjacent to each other, and we have elected a vice-president from each of these districts annually. It has been customary to try to hold district meetings in each district once each year, with the vice-president presiding, and of late years these meetings have become joint meetings with district groups from the American Association of Colleges of Pharmacy; and the chairmanship in each district has after a manner alternated between the boards group and the college group.

In some districts it has been possible to hold a meeting each year. In others it has seemed almost impossible to ever get together a representative group, and many of these district meetings have had to be omitted. I believe that this is due somewhat to the districts being badly arranged with reference to distances that must be traveled by some of the delegates, and I believe that a redistricting of the country would help the situation.

I would like to suggest that the incoming president appoint a committee to study this problem and to make recommendations with reference to regrouping the states, for consideration of this body next year. Several of the districts in the east are suffering from the difficulties referred to above, and several of the western districts are so extensive in territory that a district meeting is next to impossible. It might be advantageous to divide some of the western territory into a larger number of districts. That would be for the committee to consider and for this body to finally pass upon. I make the suggestion here because it has been a subject of comment for the past several years, and I believe the time has arrived to take some definite action toward a solution of the problem, notwithstanding the disapproval by the Executive Committee, last year, of increasing the number of districts.

Any action taken, involving a change from the present set-up, would necessitate amendment of Article 7 of the By-Laws.

OUR PROGRAM.

The sessions of the N. A. B. P., at its annual conventions, have customarily been confined to a limitation of two days, and half of the second day is devoted to a joint session with the American Association of Colleges of Pharmacy, thus leaving, as a rule, three sessions for the business program of this organization. Our routine

business seems to fairly well consume our time, leaving very little opportunity for such general discussions of the problems confronting board members, such as have been found extremely interesting and valuable in some of our district meetings.

I have had brought to my attention from several sources the desirability of setting aside a portion of our time at each annual meeting for something in the nature of a round-table discussion of matters of moment which might not have been discussed in any of our reports or brought before the convention by resolution. I believe that such a period of time could be provided for in one of our afternoon sessions, either by prolonging the session or by omitting the reading in full of some of our more lengthy reports which will find a place in our printed proceedings a little later on.

I am not making any recommendations with reference to this, but am merely presenting it to the convention to sound out the sentiment of the members regarding the desirability of setting aside an hour or so of our time for informal discussion. I am aware that this organization has customarily had before it some very excellent reports, showing evidence of a good deal of work in their preparation, and it is a courtesy we owe to the committees who have labored so earnestly in the interest of the association to give their reports proper consideration; but an examination of our past proceedings will disclose many very wordy documents which might easily have been condensed into a few paragraphs and have accomplished their ends quite as well.

APPLICATION FORM.

We have had under consideration a revision of our official application form and I believe the secretary has been working on such a revision. I believe that our present form could be improved upon and made a little more useful to board members. The Executive Committee, last year, accepted certain additions to the official blank and ordered the inclusion of three additional questions when the next supply of blanks were printed. These had reference to revocation of the applicant's certificate of registration in any state, the revocation of a liquor permit or narcotic tax stamp, and to whether the applicant had ever been held for violation of the pharmacy law of any state. These additions are useful ones and will be welcomed by all state secretaries.

My purpose in commenting on the application form is to suggest for inclusion in the form a suitable space for certification of graduation by a responsible official of the school from which the applicant graduated. While this might not be of material interest to the few states that have not at present prerequisite requirements, it would be useful to more than three-quarters of the states making up the membership of this organization.

It also would not be out of place for the form to carry a suitable space for a certification of experience. If this were included it might be necessary to provide two or three similar spaces, as the applicant may have acquired his experience under different employers. I believe that these several suggestions could be carried out without increasing the size of the present form. For instance, on page 2 of the present form, we provide for the moral character certification. The present set-up of that page could be materially abridged without sacrificing its intended purpose. The page would thus afford space for forms for certificates of experience. On page 4

of the present form there is plenty of room for a form for certification of graduation. With these additions a completed certificate would become a one-piece record. Under present conditions many of us have to resort to securing certificate of graduation and certificates of experience on separate forms and attaching them to the official application form. I would be glad if these suggestions were given consideration by this body, and if thought worthy of adoption to have them referred to the Executive Committee.

With reference to rerouting the application the Executive Committee, in its report last year, submitted several material objections, which seem to me to outweigh the benefits which might accrue from handling the application from certifying board directly to the recipient board, rather than have the certificate returned by the certifying board to the applicant and allowing him to then forward it to the board to which he is applying for reciprocity. It was suggested that in the few instances where tampering with the record was suspected the certifying board could be consulted for a verification of its original certification. The course suggested in the report of the Executive Committee seems to have been well considered and their attitude in the matter appears to be justifiable.

CONSOLIDATED EXAMINING BOARDS.

Due to the trend of the times, and perhaps influenced somewhat by the necessity for retrenchments in the finances of states, there still seems to be agitation here and there for more simplicity of governmental structure, and a tendency to combine boards, bureaus and departments, in the interest of what is termed economy and efficiency.

Within the past year or so there has been unusual activity looking toward measures of economy in almost all of the states, and the temptation to combine the various examining and licensing boards has been great. The actual effort during the past year has been limited by the fact that a large majority of the states did not have their law-making bodies in session during the past winter. Boards of pharmacy must be on the lookout for this type of legislation, especially during the coming year, and should oppose it vigorously whenever and wherever it is proposed. Where such legislation is adopted a politician is usually placed at the helm, and the identity of the board of pharmacy is, in most instances, lost, and an examining committee usually takes its place. Such a committee is selected by the political director of the department, often with political consideration in mind, and the results have not been happy, as we all know, where such conditions exist. It is seldom that any coöperation with the profession is forthcoming from the director. The functions of a board of pharmacy embrace many things other than the giving of examinations, and most of the usual activities of such a board are hampered or cast aside when these consolidations occur.

DEPARTMENT OF EDUCATION.

For the past several years we have had in operation what we have styled our Department of Education. This activity has been carried out under a director, who has been empowered to name associates on an advisory committee. A number of bulletins have been issued covering various phases of modern developments in the pharmaceutical field. I believe it is generally conceded that these bulletins

have been of a high order and that they have been thoughtfully prepared, and that the movement generally has been a creditable one to this organization.

There has been some question regarding whether the undertaking is a justifiable enterprise. It has been expensive to the organization, the bulletins having averaged in cost something close to $1.00 per board member per issue. The question in the minds of all of us is whether these bulletins are serving their intended purpose. That intended purpose is to convey to board members the information carried in the bulletins. The information has been prepared, printed and mailed to every board member in the country. The question arises as to whether, after all this has been done, the recipient board member takes the trouble to read or study material placed in his hands. Personally, I believe that very few of them do read these bulletins. If this is so, then our activities are largely wasted and our objective is thwarted. It appears to be something similar to the old adage that you can lead a horse to water but you cannot make him drink. We have gone a little further in our effort and have carried the water to the horses, and few of them have appeared to be thirsty.

The whole question of whether this activity is serving its intended purpose is one which must be decided by the Association. My purpose in mentioning it in this address is to emphasize the fact that regardless of whether the results of the effort have come up to our expectations or not, we have had an excellent piece of work competently handled by the director and his associates.

AMERICAN COUNCIL ON PHARMACEUTICAL EDUCATION.

During the past five years we have been hopeful that a comprehensive study of pharmacy might be made and that the schools of pharmacy in the United States might be officially standardized. Reference to our records would indicate that in the summer of 1927 this organization made a substantial appropriation to be used in making a survey of pharmacy schools in this country in order that state examining boards might know which schools were worthy of recognition. The American Association of Colleges of Pharmacy was later invited to join with the boards in this enterprise, and still later the AMERICAN PHARMACEUTICAL ASSOCIATION was invited to participate. Both organizations joined in the work.

A committee, representative of these three groups, was appointed and consulted with the American Council on Education. This council furnished the group with general information about similar surveys and expressed the belief that the council might supervise a survey of pharmacy if it were requested to do so. They pointed out the cost of such a survey, and the three organizations mentioned pledged respective contributions of $15,000 for this work, provided a like sum could be anticipated from certain foundations.

The joint committee has been able to report little more than progress, until quite recently. The contributions from the foundations have not been forthcoming, and we are to-day little further advanced in our effort to establish standards in this field than we were five years ago. With the depressed condition of business it is not reasonable to expect that we will receive financial aid from outside sources in the immediate future. In fact, it would appear that the probability of this is very remote. In the meantime we have made slow headway in an important sphere.

I am ready to suggest to this organization the advisability of abandoning any

hope of securing outside assistance, and the withdrawal from any understanding we may have with outside agencies, and continuing this effort in coöperation with the American Association of Colleges of Pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION. The financial condition of the N. A. B. P. at the present time would not warrant our adhering to making a contribution as large as $15,000 for the purpose under discussion. It is likely that the other two organizations also feel the effects of the present depression. It seems to me that these three organizations might, through their committee, consider this matter independently of the American Council on Education, or with the advice of a representative of the council, as suggested in the report of the committee, and to formulate plans for an adequate survey, at an outlay of an aggregate of not exceeding $25,000. It might well be that an acceptable survey could be accomplished for much less than this amount, but I suggest this as a maximum; and the burden, falling equally on each of the three organizations, would greatly lighten their obligations.

Under date of May 20, 1932, in Council Letter No. 12 of the AMERICAN PHARMACEUTICAL ASSOCIATION, the committee, representative of the three organizations, renders a report which substantially recommends that a survey of pharmacy be undertaken by the three above-named associations, and that the cost of this survey be underwritten equally by the three bodies, and that the expenditures made annually be properly budgeted. The committee suggests an expenditure of about $1500 as a sufficient sum for the first year's work. The committee has submitted a plan, and suggested as a name for the body that of the American Council on Pharmaceutical Education, and has submitted a proposed constitution and by-laws which would seem to adequately cover the subject under consideration, and to protect the interests of the participating associations. I assume that a full report will be made to this body by the committee, and hope that it will be thoroughly discussed, and recommend that the suggestions of the committee, as carried in the Council Letter, be adopted and put into effect at the earliest reasonable time.

THE FOUR-YEAR COURSE.

It is needless for me to waste words on the discussion of the merits of the four-year course in pharmacy. This course is an accomplished fact, and it starts in most of the pharmacy schools in this country in the fall of 1932. Its justification has been satisfactorily established for this Association, and for the American Association of Colleges of Pharmacy. The active member boards of this organization will put into effect the four-year requirement following June 1936. These member boards should now be giving thought to the matter of recognition of schools and the admission of applicants to state board examinations following the close of the college year ending in June 1936.

It is apparent that these boards should have well-worked-out admission requirements, taking into consideration the graduates under the two-year course, which was recognized until June 1928, and graduates under the three-year course, which should be recognized until June 1935, and lastly the graduates under the four-year course subsequent to June 1936.

In adopting standards for approval of schools and colleges of pharmacy giving the four-year course boards should take into consideration the kind of courses these institutions offer. Recognition should be withheld from any institution offering a

makeshift curriculum, and only such schools should receive recognition as give courses worthy of university credit. Such courses should include the basic sciences underlying pharmacy and an adequate amount of cultural work. Both the scientific and cultural training should be presented in approved manner. These courses should meet at least the minimum time requirement suggested by this organization, and no three-day or four-day a week course should be recognized, even though they cover, or more than cover, the minimum number of hours approved by this association. No school should receive approval which offers any intermediary degrees such as Ph.G. or Ph.C. for two or three years' work in the four-year course. I do not believe that a school of pharmacy offering any degree for less than the full four years should be accorded recognition. It goes without saying that recognition should be withheld from any institution offering courses in pharmacy from the present time onward of less than four years.

Unfortunately, it is yet necessary for states to establish their own list of approved schools of pharmacy. All of us, I feel sure, hope that the time will come in the near future when we may look forward to having a list of approved institutions supplied to us by our committee on the Study of Pharmacy.

EXPERIENCE UNDER THE FOUR-YEAR STANDARD.

The subject of the proper amount of experience to be required of applicants for the pharmacist examination has been debated in this body for a number of years. The basic requirement for examination and registration has been a four-year period, or 48 calendar months. The putting into operation of the four-year course in pharmacy has called forth considerable comment on what, in the shape of experience, should be demanded of the applicants for registration. It has been the expressed opinion of this body that, in addition to the four years' work in college, one year of drug store experience would ideally meet the situation.

It has come to my attention that this one year of experience has been under criticism from some sources, being spoken of as a fifth year of training. This is not necessarily so, and need not in any instance be so. The usual course in pharmacy occupies, each year, from eight to nine months, and the four-year course would occupy from thirty-two to thirty-six months, thus leaving a possible twelve months in which a student might acquire the necessary amount of experience to enable him to appear for his examination before a state board by the time he graduated in pharmacy; or if he was able to utilize only three-month periods in the summers between his college work he would be even then able to complete his experience in a period of about three months after graduation.

All of the above is academic. What I would like to point out in this connection is that the standard presented is not primarily a N. A. B. P. requirement, so far as reciprocal exchange is concerned, but is a part of the state pharmacy laws in most states and the various state boards are under obligation to enforce the provision. Some few of the states do not require any experience as a prerequisite for pharmacy licensure, and some difficulties have arisen where applicants from these states have attempted to register by reciprocity in other states which require a certain amount of experience. My own state of Virginia is among the few states which do not require experience. It is regarded by some that these few states are a step in advance of those which still require experience. It is my own personal thought that

drug store experience, as commonly acquired, is of very little value other than to help young pharmacists accustom themselves to meet the public and to deal with drug store routine. I have no faith in what has been termed supervised experience unless the facilities for controlling this are immeasurably increased. Such solution of this problem seems at the present time a rather remote contingency. We are forced by circumstances to keep our feet on the ground and to deal with conditions as we find them.

It also seems to me that there is little possibility of a large majority of the states abandoning some period of experience as a prerequisite for registration, and I believe that in the interest of uniformity it would be well for such states as do not now require any experience to shape their plans to secure legislation requiring one year of experience in addition to graduation as a prerequisite for registration. I would gladly put forth my efforts in my own state to make this concession in the interest of greater uniformity. We will never attain generally satisfactory working conditions so long as some of the states remain out of step with the majority, and it would seem to me a sensible thing if those who have attained legislation, which they regard as desirable and in advance of the majority of states, would be willing to sacrifice some little of the ground they have won, in the interest of the common welfare.

In a like manner a number of states are out of line in the opposite direction. These states also should be willing to make the effort to have their laws so amended as to contribute toward the gaining of uniformity throughout the country. Many states now require by law two and even three years of experience, in addition to requiring the applicant to be a graduate from a recognized college of pharmacy. In the light of our present conception of an equitable standard such lengthy experience periods are a hindrance to those who must submit to them, and they work in numerous instances hardships on those who apply for reciprocity from states having lower experience requirements. In instances where the experience requirement is established by board ruling, correction is easy. Where legislation must be undertaken a greater effort is necessary and a measure of patience will be required.

I would like to request all such states as have not at present the one-year experience requirement to give serious consideration to the suggestions made above. It will of course take time to work out this problem throughout the country, but if there is a willingness on the part of our member boards I feel sure that ultimately we can accomplish the desired end, just as we have accomplished many other things in this Association.

THE DEGREE GRANTED IN THE FOUR-YEAR COURSE.

In the past annals of pharmaceutical education we have had a motley assortment of degrees and near-degrees conferred by various institutions on those who have completed pharmaceutical courses. The most common certificate awarded to the graduate completing the two-year course was the somewhat questionable degree of Graduate of Pharmacy. Some schools conferred for a little additional work a degree of Pharmaceutical Chemist. Then we had such degrees as Bachelor of Pharmacy, Master of Pharmacy and Doctor of Pharmacy, all given for two, three or four years' work, and given indiscriminately. We observed the award of a doctor's degree for two years in courses and often the bachelor's degree for a like

amount of work, and the master's degree was often handed out without any additional work.

With the adoption of a standard four-year course in pharmacy the schools have rather generally come to the conclusion that the proper degree for the four years of work would be the bachelor's degree, and I believe that most of these are in favor of granting the degree of Bachelor of Science in Pharmacy. It is probably in keeping with the best style in educational circles to confer this degree, yet I have a feeling that pharmacy loses much by the adoption of such a designation for the degree it confers. The work done in a course in pharmacy is distinctive, and it differs materially from many other courses in which the bachelor's degree is earned. In my judgment it does not do pharmacy justice to designate the diploma earned by a pharmacist in a manner little different from those earned in many other unrelated branches.

I would like to see the schools of pharmacy in this country bold enough to strike out on a course somewhat independent of the lock-step procession of educators, at least to the extent of awarding a degree in pharmacy that would be distinctive. I believe that the straight step and the short step would be to award a degree of Bachelor of Pharmacy. This would be no more inconsistent than the action of the medical faculties in awarding the degree of Doctor of Medicine.

THE ASSISTANT PHARMACIST GRADE.

This Association has gone on record as favoring the discontinuance of the assistant pharmacist grade, and a good many of the states have secured legislation which will enable them to discontinue granting licensure of this type. In all such states I believe it has been the policy to preserve the constitutionality of their legislation by not making the provisions of the act retroactive, and by preserving the rights of such persons as already hold certificates of registration as assistant pharmacists. States undertaking such legislation should carefully examine their prepared bills to see that these two points are considered.

There has been an effort made in most states which have secured this type of legislation to have the legislation automatically confer on those already registered as assistant pharmacists the certificate of registration as a pharmacist, without the formality of an examination. I believe that this demand has been uniformly denied, as it should be. There is no good reason why an assistant pharmacist should be granted registration as a pharmacist without meeting the same conditions that the applicant for the pharmacist examination has to submit to, namely, an examination of a higher type than that given to the assistant applicant.

Many states which have a prerequisite law for pharmacist registration, in abolishing the assistant examination, have incorporated in their law a provision which would enable the assistant pharmacist in such states to take the pharmacist examination without the necessity of being a graduate in pharmacy. Such a provision is sometimes useful in having a law of this kind adopted in that it removes a certain amount of opposition. There would seem to be, however, no real necessity for making this concession. It is merely a matter of expediency.

I hope that the question of abolishing the assistant grade will be considered by more and more states as times goes on and that eventually we will have but one type of licensure throughout the country. In my judgment, there exists no good

reason for having a licensed assistant to the pharmacist. The policy is out of line with other professions and its continuance is not likely to reflect credit on pharmacy.

THE APPRENTICESHIP SYSTEM.

In commenting on the value of the apprenticeship system in pharmaceutical training I am fully aware that in a great many states the procedure of registering apprentices and strictly keeping record of their activities is held to be valuable. I cannot agree with such states, either with reference to the value of the registration of apprentices or the effect of retaining the grade, especially now that we are entering upon the four-year training in schools of pharmacy as a prerequisite for registration.

It seems to me that in view of our effort to establish ourselves more firmly on a sound professional basis we are still clinging to a heritage which smatters more strongly of a trade than of a profession, and it is my thought that pharmacy has progressed to the point where it could, with propriety, discard this feature of pharmaceutical training. We are making headway in the work of discarding the assistant pharmacist grade, and thought should be given to devising means of abandoning the apprenticeship system in such states as still retain the system. I am aware that a good many states have already discarded this provision through legislative action or board ruling. My own state is among these, but a good many states still retain the system and regard it as valuable, and it is to these that I address my thoughts on the subject.

AMERICAN INSTITUTE OF PHARMACY.

As a matter of record I wish to include as a paragraph of this address reference to the breaking of ground for the Pharmacy Headquarters Building in the city of Washington. Members of this body are fully informed of the conception of this monument to pharmacy, of the great amount of work that was put into the organization of the movement, and the raising of funds for the structure, and of the enthusiasm and hard work that has been contributed to the undertaking by many of the leaders in pharmacy; and it is gratifying to note the progress made to date. A large portion of the fund necessary for the erection of a headquarters edifice has already been pledged and paid in to the AMERICAN PHARMACEUTICAL ASSOCIATION. The architectural plans have been worked over for several years and are now in acceptable form, both to the AMERICAN PHARMACEUTICAL ASSOCIATION and to the commission in the District of Columbia which has in its hands the approval of plans for such buildings as have a public or semi-public character. Our headquarters building will face the beautiful Lincoln Memorial and will be in keeping architecturally with other buildings along Constitution Avenue facing this fine memorial. Ground was broken on the afternoon of July 1, 1932, and there was gathered together in Washington for the occasion a group of some fifty or sixty persons interested in the undertaking. It was my privilege to have been present on this occasion. I believe that it is the purpose of the building committee to go ahead as fast as possible with the erection of the headquarters building, and within a few years we may look forward to being privileged to pay visits to a national headquarters of our own; for this building will surely be the one spot in America which will be looked upon as the center of pharmaceutical activity, when the plans of those who have labored so faithfully for its erection materialize.

ST. LOUIS SURVEY.

I want to take note of the comprehensive survey of the retail drug business which took place in the city of St. Louis and in its immediate vicinity under the guidance of the United States Department of Commerce, with the assistance of a committee delegated from numerous pharmaceutical organizations. I need not comment in any detail on the thoroughness of the survey nor of the value of its findings to the drug trade. I am sure that every pharmacist in America is more or less familiar with the purposes of the survey and many of its findings, some of which have already been published. I mention it in this report more as a matter of record than to make any extensive remarks about it. It is a commendable piece of work, and I believe that this organization had a part in its promotion, and I do not think that so important a piece of work should fail to be noted in the records of our Association.

PHARMACY AT CHICAGO WORLD'S FAIR.

I desire to briefly refer to the place which pharmacy has been accorded at the Chicago World's Fair in 1933. I am sure that all of our members are familiar with the general proposition that pharmacy is to be represented there in a scientific way, in addition to the numerous commercial exhibits which will be installed by manufacturers. Pharmacy will have in the Science Building one of the finest locations of any in that section of the exhibition; and arrangements are under way to put on an exhibit that will be in every sense of the word a credit to professional pharmacy.

Our own secretary has been honored with the chairmanship of the committee that has this very important duty to perform for pharmacy. He has been laboring for the past twelve months, and will have on his shoulders the burden of responsibility during the coming year of seeing that pharmacy is creditably presented to the millions who will pass our exhibit. It is, in my opinion, a good deal of an honor that the secretary of our organization was selected for this position from among the many able men in pharmacy in America. I feel that in his having received this honor the National Association of Boards of Pharmacy has likewise been honored, and I feel equally sure that the task has been entrusted to able hands, and that all American pharmacy will deem this selection a wise one when the great exposition finally is thrown open to the public.

THE CHICAGO OFFICE.

It has been customary in these annual addresses for the president to make reference to the activities in the Chicago office, and to pay tribute to the secretary and his associates; and to compliment them on the work carried on from our central office. I cannot close this address without also doing likewise, and my reference to this matter is not in any sense perfunctory. I have not had occasion to visit the Chicago office since being installed as president, but I have on several occasions previously visited this office and know that a large amount of work is disposed of there in the course of a year. Since being president I have had very tangible evidence of the varied activities carried on, and I have accumulated a rather voluminous file of only such correspondence as the secretary thought should be brought to my attention. This file contains very little of what might be styled routine business.

I have tried to keep up with the matters that were brought to my attention, and have tried to coöperate with the secretary in the solution of some of the problems that have arisen during the year. Some of these matters have required on the part of the secretary the exercising of considerable tact, and have consumed much of his time. The scope of the material that goes into our Chicago office for consideration is very large. The correspondence from that office is voluminous, and much of it requires delving into records and other forms of research that are time-consuming. Anyone familiar with the many questions that are submitted to our central office for comment and advice will appreciate the large service that this organization is rendering to pharmacy in general.

IN MEMORIAM.

It is annually the duty of the president of this organization to pay tribute in his annual address to those among our membership who have completed their earthly labors. The list this year is not small, and includes an unusually large number of active board members. Since our gathering at Miami, Florida, a little over a year ago, the following deaths have been reported:

William Britt, Alaska	Charles F. Nixon, Massachusetts
G. C. Bond, Illinois	H. C. Tindall, Missouri
Scott Kelly, Indiana	Edgar M. Hattan, Ohio
W. W. Haire, Iowa	Chas. O. Hoffman, Ohio
T. V. Campbell, Kansas	Charles F. Kramer, Pennsylvania
Addison Dimmitt, Kentucky	George E. Sherman, South Dakota
C. S. Porter, Kentucky	O. J. Nance, Tennessee
H. Lionel Meredith, Maryland	Harry S. Arrington, Virginia
David R. Millard, Maryland	Alfred Walker, West Virginia

At an appropriate time during a later session, fitting tribute will be paid these departed members.

RECOMMENDATIONS.

In further consideration of several of the matters discussed in this paper, I would like to make the following recommendations:

1. That the National Association of Boards of Pharmacy take its place in the American Council on Pharmaceutical Education, and that the plan of the joint committee be given consideration, and that the constitution and by-laws proposed by the committee be adopted.
2. That a committee be appointed by the president to study the advisability of redistricting the United States for the purpose of National Association of Boards of Pharmacy activities.
3. That the extraordinary activities of this Association be discontinued until such time as our finances warrant their resumption, and also that such contributions as this Association has customarily been making to other agencies interested in pharmacy be discontinued temporarily where the Association is not under obligation to continue such contributions.

CONCLUSION.

The system under which we work out our problems quite clearly demonstrates the advantages of all joining together in laboring to attain the desired results in the form of higher standards, uniform legislation and cordial coöperation. We have made our progress in this manner, and it has been in degree far in advance of anything that could have been attained by scattered individual effort.

This Association has accomplished much for the good of pharmacy, and has great opportunities open before it to accomplish much more. Its influence is large and it has in its power the opportunity to elevate pharmacy to a respected plane and maintain it on that level.

The presidency of this body is the highest honor you have to bestow, and in closing this address I want to express to you my appreciation of the honor which has been conferred upon me. I have tried to serve satisfactorily, although my opportunities for real service have been few, and the actual work done during the year has been largely that of our central office, and of the various committees. I want to express my thanks to the associate officers and committeemen, and to the members in general.

In a short time I will be returning to the ranks, and the labors and the honors of this office will be passing into other hands. In retiring I assure you that I shall stand ready to serve the organization in the future, as I have in the past, to the best of my ability.

RESOLUTIONS ADOPTED BY THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

Resolved, That the National Association of Boards of Pharmacy take its place in the American Council on Pharmaceutical Education and that the plan of the joint committee be given consideration, and that this joint committee be informed that the draft of constitution and by-laws as submitted by them is acceptable to the N. A. B. P.

Resolved, That a Committee be appointed by the president to study the advisability of redistricting the United States for the purpose of N. A. B. P. activities.

Resolved, That the extraordinary activities of this Association be discontinued and also that such contributions as this Association has customarily been making to other agencies interested in pharmacy be discontinued temporarily where the Association is not under obligation to continue such contributions but only until such time as our finances warrant their resumption.

As there is a pronounced tendency to reduce the years of practical experience as a basis for registration, and as this necessarily throws an additional burden upon the colleges of pharmacy, and as it is believed that the benefits of practical pharmaceutical work are well established, *be it resolved* by the N. A. B. P. that the colleges be urged to give a greater amount of time to laboratory work in practical and operative pharmacy.

A recommendation in the Executive Committee report, which urged uniformity in the fee for registration by reciprocity and by examination with the suggestion that the fee be made $25.00, was also adopted and referred to member states for consideration when legislative changes are contemplated. In medicine, where no attempt to maintain uniform fees has been made, a condition has resulted where, in many states, the examination fee is $15 to $25 and the reciprocity fee is $75 to $100. It is unfair to shoulder the increased cost of other activities on reciprocity.

A MESSAGE FROM SECRETARY HUGH N. LINSTEAD, BRITISH PHARMACEUTICAL SOCIETY.

Before we leave America, Mrs. Linstead and myself wish to express our thanks to our American friends who gave us such a kindly and hospitable welcome in the cities we visited. We came hoping to see some of your pharmaceutical buildings and of your places of historic interest. We were not only able to do this but we had the opportunity of visiting many American homes. It will be those visits even more than the things of interest we saw that we shall remember.

Some time may pass before we can write to each one. Can you find space in the JOURNAL for this very brief word of appreciation of the kindness and hospitality we have received?

Yours very truly,

HUGH N. LINSTEAD.

ADDRESS BY T. GLADSTONE HINES, PRESIDENT OF THE BRITISH PHARMACEUTICAL SOCIETY.

Delivered at the Toronto Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION–Canadian-Pharmaceutical Convention.

It is perhaps not entirely an easy matter to find fitting words in which at once to express our thanks for your wonderful welcome to us—the British representatives.

I wish to thank our Canadian hosts here and now not only for their courtesy in giving us this unique opportunity of meeting you (Ladies and Gentlemen), but for their abundant hospitality also.

And to you all (Ladies and Gentlemen), representing as you do, all parts of the Dominion and the great Republic across the border, I bring the most cordial greetings from my Council and the members of the Society of Great Britain.

I believe I am correct in saying that this is the first occasion of an official visit by the President of the Society of Great Britain to America. It is most appropriate, most happy on such an occasion to find gathered here, pharmacists from the whole of the Northern Continent. Those of us here from my country—Mr. Herbert Skinner, the head of the British Conference, Mr. Thomas Marns, the Chairman of our Law Committee, Mr. Hugh Linstead, the Secretary and Registrar of our Society, we all feel the distinction that falls to us of company with you. Personally, I feel it a great honor to be permitted to voice the feelings and the sentiments of your confrères of Great Britain. In addressing the Joint Convention to-day I feel that doubtless I might most usefully say something of the work and the achievements and the aims of British Pharmacy as embodied in the official organization, the Pharmaceutical Society.

Our field is Great Britain—that is, we cover and control England, Scotland and Wales. Ireland has (unfortunately, if I may be allowed to say so) two Societies of its own. We are nearly a century old—established as we were in 1841, and we are, as you will gather from my remarks, in all essential features, a truly British body. My Society is a voluntary association of men and women engaged in the many spheres of pharmaceutical activity, wholesale, retail, hospital, institutional, together with employed qualified assistants, and even embracing those in His Majesty's forces.

The work of controlling and directing this national organization falls upon an elected voluntary Council of 21 members supported by a host of voluntary scientific workers drawn from the members—the universities and the allied educational colleges.

I am not sure that we are not something rather unusual even for Great Britain. In essence, we are a Voluntary Department of State—we are unusual in that we function under the control of that curious survival, the King's Privy Council. We educate, we train, we examine men and women to act as pharmacists. We supervise a section of research and scientific work and, not least, we act as a state policeman. At the same time we are not a State Department as it is understood, and have no funds from the State for the carrying on of what are, in effect, public and national services. We provide and regulate our own finances. We are rather proud of the services we thus render which include also active coöperation with the Ministries of the Govern-

ment—the Health, the Home, the Agricultural Departments and so on, together with the General Medical Council. An official enquiry into our work, recently undertaken, disclosed the gratifying fact that we did our job efficiently and satisfactorily.

You may appreciate from these points that we are an ethical society. We are not concerned with business affairs and organizations as such. In reality we are expressly barred by a high legal decision from so acting. We provide the men and women, we believe well educated and well trained from a pharmaceutical point of view, to give the community what it needs for that purpose. Our affair, therefore, may be summed up in a sentence—it is the status and the standard of the British pharmacist. So the work and the aims of my Society consist in constantly following the needs of our nation, a meticulous regard for the changes in medical outlook and treatment, all the phases of the development of legal enactments and social services, and in all those things we still adhere to the traditional objects of the founders of our Society.

In the first place it falls to us to set a standard of training in chemistry and pharmacy. That is achieved in a coördinated system based on a definite standard of primary education. The next stage of pure scientific lectures and practical work is given in a large number of schools and colleges which conform to conditions laid down by us. A great deal of actual personal inspection is done by the members of our own Council.

The work for final parts of the Qualifying Examinations again must be undertaken in schools and colleges approved by the Council. Our control, therefore, is very real and I think very thorough.

I lay very great stress on a true Pharmaceutical training—that is, in pure pharmacy—what one might call hand and eye training. We have recently taken powers to lay down conditions under which such pharmaceutical training shall be given. As you may be aware, we call such training "pupilage" and it may be taken in a wholesale manufacturing laboratory, a pharmacy, or in any of large or small hospitals and allied institutions. Specific conditions either have been or will be enforced in all these places.

Personally, I attach the utmost importance to this phase of our work. Efficient and thorough pharmaceutical training is the keystone of the arch. Our own Headquarters in London includes in its ambit our own College of Pharmacy which has a history and a record of no small importance. In the Dean of the School and the head of our research department, Professor Greenish, we have a scientist we delight to honor. The enforcement of legal standards in respect of the important glandular products led to the establishment by the Society, some few years ago, of our Pharmacological Laboratories. I commend to you the important researches embraced in the Annual Reports and in our *Quarterly Journal of Pharmacy and Pharmacology*.

Again we have a section given over to the assistance of the General Medical Council for coöperative reports in the compilation of The British Pharmacœpia. This opens up much that I might say to the Convention but I especially hope that my colleague, Mr. Skinner, may cover some of this highly important field to our mutual advantage. Then, too, in the matter of the administration of the Pharmacy Acts some of you will have the opportunity of hearing the Chairman, Mr. Marns. He will, I am sure, most adequately deal with that side of our functions.

I have said nothing yet of our Benevolent Funds. It was one of the original objects of the founders of our Society to provide funds for the relief of distressed members—for widows and for orphans. That tender regard for the perils of ill-fortune has been most rightly cherished throughout the history of our Society. Two Committees of the Council are engaged on this—the General Benevolent Committee and the special War Auxiliary Committee. Substantial funds are at their disposal accruing from invested money and annual subscriptions. The whole of these amounts are expended in necessary relief, all charges being borne by the main administration costs. Beyond all these specific things we hold a sort of watching brief to protect and promote the general interests of our 15,000 and more members. A very active life, I do assure you. And all this activity centers round London and Edinburgh. Scotland has its own Executive—its own resident Secretary—its own Headquarters and its own Board of Examiners to conduct examinations in Edinburgh.

So far as the central London administration is concerned, that is in the very able hands of Mr. Linstead. But no reference to London would be complete without an expression of my high admiration for the efficiency of that admirably organized staff. Both Mr. Linstead and his second in command, Mr. Adams, are not merely pharmaceutical chemists, but both are Barrister's-at-law.

That in itself speaks volumes for the quality of the men and the quality of the services they render to the Society—to its Council and to its President.

Our publications: *The Pharmaceutical Journal, The Quarterly Journal of Pharmacy & Pharmacology* and *The British Pharmaceutical Codex*, in particular, demand far more than a fleeting reference—but time, like an ever-rolling stream, is bearing me away.

I have attempted an all too sketchy survey of some of the salient facts and features of your opposite number in Great Britain—a bird's eye view, in fact.

Its policy can be summed up in its functions as I have stated them—to develop a highly trained personnel, a high organized section allied and complimentary to the medical services. The Council responsible for this is a serious-minded body of men giving freely of their time and energies to this form of public service.

Now, if you will bear with me for a few minutes longer, I want to bring my remarks to a close on a broader note. All of us assembled here are conscious of the stress and strain through which the whole world is passing. I want, if you will permit me, to emphasize the real value of these personal contacts which can but create an atmosphere of kinder relationship truly and broadly based on peace and good-will between all men. We all realize the crying need for a sane international outlook. As a public man, I welcome the opportunity to add my humble quota. Will you allow me to express the hope that every delegate present will return to his (or her) home town and city, firmly resolved to carry such tenets into practical effect. We represent a peace-loving nation speaking with you a common tongue, and we are not here merely to promote a common pharmaceutical accord, but, in our small way, a very real friendship between the great nations we unitedly represent.

I close, as I began (Ladies and Gentlemen), offering you our thanks, offering a real regard for a closer measure of coöperation between your Associations and my Society. Individually and collectively I extend to you my grateful appreciation of such a kindly and sympathetic hearing.

Other addresses will be published in later issues of the JOURNAL.

ADDRESS BY PRESIDENT G. A. BURBIDGE OF THE CANADIAN PHARMACEUTICAL ASSOCIATION.

Delivered at the Toronto Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION–Canadian-American Pharmaceutical Convention.

Mr. Chairman, Ladies and Gentlemen:

In the presidential address to our Canadian Association it was appropriate that I should deal with certain problems as they relate to Canadian Pharmacy. I trust that I may now be permitted to discuss a few of these questions in a more general way.

The Canadian Pharmaceutical Association, as you all well know, is a federation of our Provincial statutory pharmaceutical bodies with the object of correlating their efforts in all matters pertaining to their common interests. Its functions are varied and are related to any and every matter that touches Pharmacy that may expediently come within the scope of such an organization. This consolidation is necessary with us because of our comparatively small numbers. Having only some thirty-five hundred druggists in Canada we cannot maintain, even if we thought it advisable, a multiplicity of organizations as is found in Pharmacy in the United States. The general sessions of our Conventions deal as occasion arises with historical, legislative, educational, examinational, administrational or commercial questions. Hence, in an address such as I am permitted to give to-day, there are no limitations as to subject matter. I shall, however, confine my remarks to a few points and in the good old clerical fashion will divide what I have to say under three heads; historical, educational and commercial; with the emphasis, perhaps, on the last.

THE HISTORY OF PHARMACY AND ITS VALUE.

The history of Pharmacy has been exhaustively and most interestingly written by Dr. Charles H. LaWall; the progress of Pharmacy in Great Britain has been recorded by Bell and Redwood and others. We, in Canada, are making an effort to gather up some fragments of our

pharmaceutical history for the day when some one with a gifted pen will make of it an interesting and profitable story.

We have not escaped criticism for this effort. We have been told that we should be too busy making history to be bothered with writing it or even reading it. That is a wrong attitude. It is an inspiration to read of the accomplishments of pharmacists of bygone days, an inspiration to do something for the advancement of science and for the application of science to the improvement of health. We are made to realize that the true measure of our lives is the *unselfish* service which we render our several communities and the world at large, the service which is rendered without hope of gain or reward.

When we read the history of Pharmacy we gain in respect for our vocation; we find an antidote for the professional inferiority-complex with which some of us are afflicted.

We find that the problems we are discussing to-day are not new problems; that much wisdom has been poured out in their discussion in bygone years. It is intensely interesting to read the addresses and papers presented to our associations some twenty years ago. It would be a mistake to discourage any appropriate contribution, but surely it would be better if every contribution were prepared with some knowledge of previous contributions on the same subject; this is the scientific method.

In reply to those who say that we should be too busy making history to be bothered about history, may we not suggest that perhaps it would be better if every man who is called upon to make history, were obliged to study history first.

EDUCATIONAL OUTLOOK.

No drug convention is complete without a discussion of the time-honored question—"What is the future of Pharmacy?" History tells us that since the dawn of civilization, Pharmacy has had a service to render; it assures us that short of the millenium, there will always be need for pharmaceutical service, and that it will be rendered by some one, if not by those calling themselves pharmacists, then by others.

When I started my apprenticeship I was told that I was foolish, that Pharmacy was pretty nearly down and out. Well, Pharmacy is still on its feet. The drug business has been good to me. I like it and if I had another chance, I would again choose Pharmacy. And yet we all know how much Pharmacy has changed in the past two generations. We do not need to be told how statutory pharmacy lost first the wholesale trade, then the manufacturing, and that now the hospitals threaten the extinction of what remains of professional pharmacy in the drug stores.

We may deplore the shortsightedness or supineness of those who in earlier days permitted the wholesale and the factory to become independent of Pharmacy Acts, but we must recognize the fact that the statutory bodies that to-day are restricting registration to those actively engaged in retail drug business are perpetuating the same mistake. We may have traveled too far to remedy this situation except in respect to hospitals. Here we have a clear right to insist on the application of the Pharmacy Acts. The public within the hospital should have the same pharmaceutical protection as outside. In many hospitals they are not so protected.

But I do not believe it is too late to change our policy in respect to the wholesale and manufacturing fields. I believe that statutory pharmacy *should* welcome to its membership all qualified pharmacists no matter in what field of pharmaceutical work they may be engaged. There is need for consolidating the profession of pharmacy. Pharmaceutical manufacturing, wholesale distribution of drugs, and hospital dispensing should be done by pharmacists. These fields should be open to and indeed, as far as expedient, *reserved* for the graduates of our pharmacy schools.

The recognized scope and functions of Pharmacy are of tremendous importance to our statutory organizations and of grave concern to our colleges whose function it is to maintain pharmaceutical service.

This leads us to a question about our colleges. Are they providing courses that will prepare their graduates for the kind of pharmaceutical service that may be required of them in the next two or three decades? It is the duty of our colleges to train for such service, no matter in what field it may be performed; it is not their function to make retail druggists, but to train pharmacists.

One cannot but be glad that our colleges are raising their standards, and the fact that in

so doing they have the support of the craft at large is a most helpful sign. Ability, training and culture are the things that should count in our graduating classes, not mere numbers. It is in the interest of the public as well as of the profession that the over-dilution of Pharmacy be stopped.

Pharmacy, that is, what we refer to as professional pharmacy, is said to be the handmaid of Medicine. *That* in the nature of things, it must always be. In framing our curricula, therefore, it should be our constant aim to approach closer to Medicine, to become more proficient in those medical sciences which enable the pharmacist to know and understand the vocabulary of the medical man, and to appreciate his needs; to keep posted as to the progress of Medicine; and to become skilful in those services which it may be appropriate for pharmacy to render to medicine.

Our curricula should be aimed to meet future opportunities rather than to perpetuate traditional materials and methods. If I were to say that no Pharmacy school should be conducted except in close affiliation with a school of Medicine, there are doubtless many, whose opinions on other points I highly esteem, who would strongly disagree with me. Nevertheless, as a general policy of pharmaceutical education I think such a stand well taken. It is only by contact with Medical schools that we can hope to adjust our teaching to the changing world of Medicine.

It is better to give our students a broad training in the pure sciences and in medical sciences than to provide them with courses having *entirely* a pharmaceutical direction. This is true both for future usefulness and for cultural reasons.

I doubt that there is any better course from a purely educational point of view, taking both head and hand into consideration, than the combined Pharmacy and Bachelor of Science course. The cultural value of the course has a strong appeal, and I think we would do well to stress that value rather than over-emphasize its utilitarian features. After all, as has been often said, the chief purpose of any educational course is to teach how to live rather than how to make a living.

While all this is profoundly true, there is a field, perhaps a comparatively limited one, which is peculiarly our own; the Science and Art of Pharmacy—knowledge of drugs and skill in compounding them. I wonder if we are succeeding in imparting this sort of an education. A year or two ago I was asked if I could recommend a young man as a "formula man" for one of our manufacturing houses; some one to devise new formulas and improve old formulas in a pharmaceutical way. Evidently what was wanted was a practical pharmaceutical chemist and pharmacist, one who could successfully solve difficulties in regard to *consistence*, *appearance* and *flavor*. I was unable to do so. Every Pharmacy college in Canada may have had the same request; I don't know about that but I do know that the position is not yet filled, and it is a good position so far as salary goes. It is strange that among all the Pharmacy graduates of the past two or three years, that not one can be found capable of filling such a position or willing to accept it. And yet it is not so strange when we come to think of it. Practically all, if not all, of our students come from drug stores, and the drug store to-day appeals chiefly to those with the commercial instinct; and it developes that instinct rather than the scientific. There are very few opportunities in the drug store to-day for a boy to learn the science and art of Pharmacy. For most candidates the only place to acquire that science and art is the College. Do we, while providing a broad scientific and cultural education, at the same time impart real practical knowledge and skill in the art of compounding? I do not mean dispensing, I mean the art of building up pharmaceutical formulas. Are we content with teaching our students simply how to dispense prescriptions and make galenicals? Do we carry them far enough to conduct research in pharmaceutical formulas? To how many of our graduates would we entrust a pharmaceutical problem about a pharmacopœial preparation, or about a toilet preparation? Should this be so, or should it not be the goal of our pharmacy laboratory work? Time was when every pharmacist conducted experiments of this kind. The younger generation seems helpless judging from the problems sent in to the college from the drug store. We welcome these problems; they are just what we need, but in some cases at least the very fact that they are problems to the drug store, shows a deficiency in the drug store.

I am speaking of conditions in my own territory, and I strongly suspect throughout Canada. Of course I cannot speak of conditions elsewhere.

A striking evidence of the lack of compounding in the drug store is found in the difficulty in procuring from ordinary wholesale houses suitable material for pharmaceutical manufacturing.

One almost suspects that the big manufacturers skim the cream of the market and leave the refuse for the supply of the druggists.

One need not point out again, as has so often been done, the danger to the future of retail pharmacy in this failure to practice the Art of Pharmacy.

As for our Colleges they must not be turned aside from their duty no matter how bad the condition may be in retail pharmacy. As I have already said, and I am sure you will agree with me, it is the duty of Colleges of Pharmacy to teach Pharmacy, no matter in what field pharmacy may be practiced.

COMMERCIAL CONDITIONS.

We are not allowed to forget, however, that Pharmacy is a business as well as a profession. Most of us are painfully aware of this fact. The retail pharmacist has all the problems of other retailers, plus.

His merchandising problems are, nevertheless, the same as other retailers It is probably because of his superior talents or enterprise that the pharmacist is taking the lead in combating predatory price cutting, or it may be that his higher business costs compel him to do so. The pharmacists of Great Britain gave the lead, and now all over this continent retail druggists are fighting this evil. As old as the hills and the subject of discussion for many years, the problem has been seriously attacked on this continent only within the past decade. In the States an uphill battle is being fought over the Capper-Kelly Bill. We in Canada made a strenuous effort to adopt the P. A. T. A. of our English brethren.

The English law is different from that now prevailing on this continent. Combining in trade defense is recognized there as perfectly legitimate. This was well illustrated in some observations of Viscount Haldane when as Lord Chancellor he was discussing a case before the Privy Council in 1914. He went so far as to say that: "The mere fact that the result of a trade combination is to advance prices is not necessarily opposed to public policy. A combination to advance prices so as to give proper remuneration to labor and capital is prima facie lawful." Again: "although cheapness may be a desideratum, a ruinous competition between traders is not to the public advantage." Coming from such an authority as Viscount Haldane, a statesman as well as the leading British jurist of his day, and endorsed by the other Lords of the Privy Council, surely these statements should carry weight. The report of the Federal Trade Commission of the United States in 1931 is in striking contrast.

To say that nothing has been accomplished on this continent in these campaigns against predatory price cutting, that all effort and money expended have been a waste, would be a mistake. To what extent they have exerted a steadying influence upon business we may not know, but it is probably true that they have to a considerable extent. It is certain that the attention of legislators and economists has been directed to a fresh study of this problem, and that an educative influence has been started which may bear fruit in due time.

We are forced to recognize that no effective legislative measures against predatory price cutting can be secured unless and until it is conceded by the legislatures and the courts that stabilization of retail prices is a good policy in the interest of trade and commerce as a whole and not detrimental in the long run to the consumer.

We must recognize that what we ask for ourselves must be conceded to all other retailers. If our branded articles are to be price-stabilized, all other branded goods will be subject to the same rule, and there is scarcely a commodity that cannot be branded. If we demand price protection for ourselves we must be willing to pay protected prices to other merchants, as indeed in many cases we already do. The whole question of distribution of commodities is involved. The problem is enormous. Some of the fundamental teachings of economists must be changed and a new viewpoint taken as to the laws of competition. Much good work is now being done in the collection of data bearing on the problem of wholesale and retail trade, especially by the National Wholesale Druggists' Association of the United States. Such data to be of real value should be not only fairly representative, but should be wisely and impartially interpreted, and should be available to governmental and independent economists. One has the feeling that much of the trade matter published in our Journals advancing this or that trade policy has been propaganda for the manufacturer and wholesaler, and was not written in the interests of the retailer to whom it was addressed. However this may be, there is a real need for greater study of trade problems with a view to the interests of the retailer and the public.

It would be of advantage to the retail trade to employ a corps of capable persons to collect data respecting the whole question of distribution, to offset biased statements made by economists who are in the employ of other interests. This is a tremendously large order, I know, but Big Business employs lawyers, economists and publicity experts, and independent merchants should join forces to do likewise.

The present objective is price stabilization. This may be defined as the adjusting of prices from time to time in order to maintain a margin which will meet selling costs and provide the dealer with a reasonable profit. This is the policy which the retail drug trade is seeking to establish by public consent and by legislative enactment. Is it a sound policy, a policy in the interest of the public? We assuredly believe that it is, but we have to admit that our case is not yet so strongly made out, we have not marshalled sufficient facts and arguments as to convince our respective legislatures.

A time of depression such as we are now undergoing may seem to be an unfortunate time for such a discussion, but that is not so; in times of prosperity we are apt to be careless, but in times of adversity we consider the error of our ways. So in matters of national economies. There is no better time than now to prepare the distributors' argument and put it before the public.

How trade may be stabilized is the present-day problem of economists. The Empire Trade Conference seriously discussed how wholesale price levels may be raised. In a recent letter a prominent economist referred to predatory price cutting as a practice to which sound objection can be raised.

The old idea that cheapness of living, a consumer's paradise is the great desideratum, is gone. The peculiar and exasperating thing about the situation is that while the government concerns itself with the welfare of the producer, the manufacturer and the transportation agencies, it fails to regard the welfare of the distributor. Among those who serve in supplying the world with its commodities from the original source of supply to the ultimate consumer, distributors constitute the one class that is debarred from favorable consideration. It is true that our position is strategically better than in former generations when the very word "merchant" was used as a term of opprobrium, the "tradesman" was a sort of inferior being, and the "middleman" was marked for elimination. While our position is infinitely better than in the long ago we are still working against a current as old as civilization itself, and which is not entirely spent even in this democratic age.

Distributors would raise no objection to distribution working out its own salvation if it were permitted to do so without undue restrictions. We do not object in the main to Section 498 of the Criminal Code of Canada and to the Combines Investigation Act, but we do most strenuously object to their application in such a way as to foster the department store, the coöperative and the chain and to drive the independent retailer out of business.

Theodore Roosevelt is quoted as having said that "a hundred little farm owners are far more valuable to a nation than one large plantation owner." I would paraphrase that quotation—"a hundred little shopkeepers are far more valuable to a nation than one large department store." And another Roosevelt has more recently said: "It seems to be the curse of our modern civilization to do away with small business and put control into the hands of a few big men." A recent article in the *British Pharmaceutical Journal* says: "the proper ordering of distribution—a vital factor in the cost of living—is of paramount importance to the nation."

Distribution cannot be eliminated. It must be carried on by some one and no one has yet demonstrated that the department store, the chain or the coöperative is on the whole capable of rendering a better or more economical service than the independent retailer.

It is not fair to give the corporation special prices and quantity discounts which are not justifiable on a cost basis, and then say that the independent dealer cannot render an economical service. Let there be an equitable adjustment of wholesale prices and the independent retailer will more than hold his own.

Retail predatory price cutting is but one symptom of an immoral trade condition, which if not rectified may lead to an undesirable industrial revolution. Preferential price lists, secret prices, hidden discounts and undue quantity discounts are just as injurious to fair trading as retail price cutting; they are predatory price cutting in the wholesale field. In fact these forms of wholesale price cutting are the chief cause of retail price cutting, since it is such considerations

that give the department store, the chain and the big cutter the advantage over the independent dealer. If you equalize wholesale prices you do much toward effectually stabilizing retail prices. It is the pressure from behind, the greed of the manufacturer, his high pressure salesmanship, choking the markets, that is the cause of most of our present-day commercial troubles.

May I again point out that the discussion of unfair trade practices among ourselves will not carry us to our goal; the public, the legislature and the courts must be convinced of the wisdom of price stabilization and consent to its enforcement.

REPORT OF THE FAIRCHILD SCHOLARSHIP EXAMINATION.

In 1927 the Chairman was requested to report on the Fairchild Scholarship winners. The report was made in 1928 on candidates up to and including the year 1928. The winner in 1929 was Herbert Marain of Rutger's University College of Pharmacy. The winner of 1930 was Solomon Gershon of the College of Pharmacy, University of Illinois, and the Chairman understands he continued post-graduate work. Louis Magid won the 1931 prize, a student of Florida University; he has been doing post-graduate work. The Chairman has not continued these investigations of the earlier candidates, but will do so if requested.

While a committee was appointed, at the request of the Chairman, by President Townes R. Leigh, to study the Fairchild Scholarship examinations and report on a method for carrying on these examinations, he has taken the liberty of making some notations covering a period of ten years. The new edition of the Syllabus is about ready for publication, or will be very soon and should form a basis for future examinations. The interim, *i. e.*, the requirements of the members of the American Association of Colleges have changed somewhat from the last edition of the Syllabus.

The Chairman was instructed that there should be no restriction as to the number of years included in a course of pharmacy, the question having specifically been asked whether limitations should be made relative to preliminary qualifications, except that the admission shall be the requirements for a student of a school or college of pharmacy of the American Association of Colleges of Pharmacy and that he shall have completed the course in pharmacy, and that there was no intermission in his studies in pharmacy—see report of 1922.

There were 14 candidates in 1922—the highest general average was 89.25. In 1923 there were 24 candidates—the highest average was 88.75, the lowest average 46; the general average 76. In 1924 there were 24 candidates—the lowest general average was made in pharmacy. The highest average was 83.45; the lowest percentages were Chemistry 38, Pharmacy 30, Arithmetic 43, Botany, etc., 37. In 1925 there were 33 candidates—the highest average was 85. In 1926 there were 20 candidates—the highest average was 88.75; the lowest, 38. In 1927 there were 13 candidates—the highest general average was 90; the lowest, 33. In 1928 there were 33 candidates—the highest average was 94; the lowest, 47.88. In 1929 there were 31 candidates—the highest average was 89.75; the lowest, 36.75. In 1930 there were 37 candidates—the highest 79.75; the lowest, 46.30. The general average in Bacteriology—Physiology was 78; the lowest candidate made 51.5; the lowest in Chemistry less than 27; in Arithmetic 25; the highest in Arithmetic, 100. In 1931 there were 40 candidates; the highest average was 92.4; the lowest, 44.5; in Therapeutics-Bacteriology the highest was 93; the lowest 49; four averaged 100 in Pharmaceutical Arithmetic; the lowest made 25; the highest record in Chemistry was 96; the lowest, 27. Dean Bergy graded the examinations.

The general plan was followed this year in letters to the members of the Committee and also in writing to the deans; several were ready to prepare questions for the Committee. It should, perhaps, be stated that conditions at the time it is necessary to have the questions prepared are sometimes different and, hence, there is encroachment on time which lays the Committee on greater obligations to the dean accepting of this work. We are, therefore, under greater obligations to Dean Bergy for responding to our request; as stated, he generously helped us out last year by grading the examinations. Dean C. B. Jordan, who had prepared the examinations in 1930, aided us by grading the examinations this year. To both Dean Bergy and Dean Jordan we express our thanks, realizing that it requires time and, perhaps, when other duties are heavy. It should be understood that we request the favors from faculties of schools having no candidates.

The Deans are familiar with the letters sent out in recent years and therefore they will not be repeated.

Twenty-nine candidates took the examinations and nineteen schools were represented.

The subjects were Pharmaceutical Chemistry, U. S. P. Assay and Testing, Organic Chemistry, Physiology, Materia Medica and Botany, Bacteriology, General Pharmacy, Toxicology and Pharmacodynamics.

The results of the first nineteen candidates are tabulated:

	Phar. Chem.	U. S. P. Assay and Testing.	Organic Chemistry.	Physiology.	Materia Medica and Botany.	Bacteriology.	General Pharmacy.	Toxicology and Pharmacodynamics.	Averages.
1.	82.90	98.00	85.00	73.00	85.50	67.67	64.00	72.00	78.51
2.	76.20	88.00	77.00	66.00	85.40	66.60	69.00	76.00	75.27
3.	72.60	86.00	73.00	70.00	87.20	49.67	91.00	57.00	73.31
4.	73.90	98.00	65.00	79.00	76.00	30.67	50.00	60.00	66.57
5.	88.00	96.00	55.00	48.00	89.20	44.00	55.00	49.00	65.52
6.	76.40	72.00	47.00	91.00	81.60	29.50	64.00	59.00	65.06
7.	84.40	78.00	57.00	78.00	67.80	32.20	60.00	48.00	64.17
8.	76.00	82.00	51.00	58.00	82.60	52.00	57.00	46.00	63.07
9.	83.40	94.00	87.00	45.00	82.90	48.67	30.00	31.00	62.74
10.	62.00	78.00	48.00	70.00	73.90	31.00	60.00	45.00	58.49
11.	57.50	86.00	29.00	60.00	82.90	46.50	50.00	45.00	57.11
12.	58.30	82.00	47.00	65.00	78.70	20.00	56.00	47.00	56.75
13.	71.40	82.00	36.00	46.00	76.10	25.34	57.00	48.00	55.23
14.	70.00	86.00	66.00	53.00	62.70	22.67	36.00	45.00	55.17
15.	74.20	76.00	38.00	56.00	70.80	20.00	60.00	43.00	54.75
16.	73.80	70.00	33.00	65.00	79.20	23.75	35.00	58.00	54.72
17.	51.20	72.00	37.00	71.00	82.90	26.34	51.00	37.00	53.55
18.	70.10	80.00	45.00	63.00	74.40	11.00	35.00	41.00	52.44
19.	62.20	80.00	38.00	32.00	82.50	11.00	42.00	60.00	50.96

The general averages for the nineteen candidates are: Pharmaceutical Chemistry, 71.81; U. S. P. Assay and Testing 83.36; Organic Chemistry, 53.36; Physiology, 62.57; Materia Medica and Botany, 79.06; Bacteriology, 34.66; General Pharmacy, 53.78; Toxicology and Pharmacodynamics, 50.89.

The first candidate in general average, 78.51, was 4th in Pharmaceutical Chemistry, 82.90; tied in U. S. P. Assay and Testing, 98; was 2nd in Organic Chemistry, 85; was 4th in Physiology, 73; 3rd in Materia Medica and Botany, 85.50; highest in Bacteriology, 67.67; ranked 3rd with another in General Pharmacy, 64; 2nd in Toxicology and Pharmacodynamics, 72.

The second had a general average of 75.27; was 6th in Pharmaceutical Chemistry, 76.20; 4th in U. S. P. Assay and Testing, 88; 3rd in Organic Chemistry, 77; 7th in Physiology, 66; 4th in Materia Medica and Botany, 85.40; 2nd in Bacteriology, 66.6; 2nd in General Pharmacy, 69; 1st in Toxicology and Pharmacodynamics, 76.

The third candidate was 10th in Pharmaceutical Chemistry, 72.60; 4th in U. S. P. Assaying and Testing, 86; 4th in Organic Chemistry, 73; 6th in Physiology, 70; 3rd in Materia Medica and Botany, 87.20; 4th in Bacteriology, 49.67; 1st in General Pharmacy, 91; 5th in Toxicology and Pharmacodynamics, 57.

The fourth candidate had a general average of 66.57; was 8th in Pharmaceutical Chemistry, 73.90; ranked with the first in U. S. P. Assaying and Testing, 98; 6th in Organic Chemistry, 65; 2nd in Physiology, 79; 13th in Materia Medica and Botany, 76; 10th in Bacteriology, 30.67; ranked 9th with another in General Pharmacy, 50; 3rd with two others in Toxicology and Pharmacodynamics, 60.

Calculations were made as to the effect on general average of the first four of the candidates if Toxicology and Pharmacodynamics had been omitted from the examinations; all would have improved their respective averages. The general averages of the first four were 78.51, 75.27, 73.31, 66.57.

If Toxicology and Pharmacodynamics had been omitted from the examination the third

man would have had a very slight advantage over the second; the averages would have been 79.44, 75.33, 75.6, 67.3. The places would not have been changed if Bacteriology had been omitted; the averages would be 80, 76.80, 76.6, 71.70. If both of the subjects had been omitted the third candiate would have advanced to second place, otherwise no change in place; the averages would be 81, 76.80, 79.9, 73.6.

(*It should be stated that in the branches indicated the curricula of schools differ. The new edition of the Pharmaceutical Syllabus is now being completed.*)

The fifth candidate made good averages in Pharmaceutical Chemistry, U. S. P. Assay and Testing, and Materia Medica, but his averages would not have advanced him above any of the first four, if Bacteriology, Toxicology and Pharmacodynamics had been omitted. The ninth candidate made good averages in four subjects, but the results would not have been changed sufficiently to bring him in the class of the first four.

The fifth candidate was highest in Pharmaceutical Chemistry, 88; the ninth candidate was highest in Organic Chemistry, 87; the sixth candidate was highest in Physiology, 91; the first candidate was highest in Bacteriology, 67.67; the third candidate was highest in General Pharmacy, 91; the second candidate was highest in Toxicology and Pharmacodynamics, 76. Thus the first were: Candidate 5 in Pharmaceutical Chemistry; candidate nine in Organic Chemistry; candidate 6 in Physiology; candidate 1 in Bacteriology; candidate 3 in General Pharmacy and candidate 2 in Toxicology and Pharmacodynamics. Schools having two candidates can hardly be compared for very close grading, although comparison might be made of some subjects in which there is related efficiency—this, however, was not undertaken.

Committee:

WALTER D. ADAMS, President, A. PH. A.
TOWNES R. LEIGH, President, A. A. C. P.
A. L. I. WINNE, President, N. A. B. P.
E. G. EBERLE, *Chairman*, JOURNAL, A. PH. A.

THE WINNER OF THE FAIRCHILD SCHOLARSHIP FOR 1932.

JULIUS MESSINA.

Julius Messina, of Baltimore, won the Fairchild Scholarship for 1932. He graduated from the Baltimore Polytechnic Institute in 1929 and matriculated at the School of Pharmacy of the University of Maryland, August 10, 1929, graduating from this institution June 4, 1932. He passed the Theoretical Board in June 1932.

In 1931 Mr. Messina was awarded the Membership Prize of the Baltimore Branch of the A. PH. A. He received the second Certificate of Honor from his Alma Mater in June 1932. He is a member of Rho Chi.

The Fairchild Scholarship is awarded by competitive examination to a student of a College of Pharmacy, member of the American Association of Colleges of Pharmacy. The scholarship has a value of $500.00. The money is to be used in post-graduate work at any school of pharmacy the winner may select and Mr. Messina has selected his Alma Mater. The scholarship was founded by Samuel W. Fairchild of New York.

This year twenty-nine students competed, representing nineteen schools.

Mr. Messina was born in Baltimore, August 23, 1911, the son of Frank and Concetta Messina.

ASSOCIATION BUSINESS

THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1931–1932.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

Letter No. 15.

To the Members of the Council:

The Second Meeting of the Council for 1931–1932 was held in the Royal York Hotel, Toronto, Canada, on Monday forenoon, August 22, 1932, with the following members present: Hilton, Beal, Arny, Bradley, Day, Hunsberger, Adams, Eberle, DuMez and Kelly.

105. American Council on Pharmaceutical Education. The secretary reported that Motion No. 34 (see Council Letter No. 12, pages 603 to 604, No. 13, page 721 and No. 14, page 830) has been carried.

106. Use of Text of N. F. V. The secretary reported that Motion No. 39 (see Council Letter No. 14, page 830) has been carried, and that Sister Alma has been so advised.

107. Window Strips for Pharmacy Week. The secretary reported that Motion No. 40 (see Council Letter No. 14, page 830) has been carried and that Drs. Newcomb and Hogstad have been advised.

108. Election of Members. The secretary reported that Motion No. 41 (see Council Letter No. 14, page 830) has been carried and that applicants for membership numbered 316 to 327, inclusive, are declared elected.

109. Annual Joint Meeting of the Executive Committee of the N. A. R. D. and of Council of the A. Ph. A. An invitation from Secretary Henry of the N. A. R. D. for such a joint meeting on Monday, September 26, 1932, in connection with the annual convention of the N. A. R. D. in Boston, Mass., was read. On motion of Beal, seconded by Arny and carried, the secretary was directed to acknowledge the invitation with the thanks of the Council and to advise the members of the Council who will attend the joint meeting.

110. Illness of Prof. J. G. Beard. The secretary reported that Prof. Beard had suffered from some eye trouble since reaching Toronto and that Prof. Beard requested to be excused from the meetings of the Council. On motion of Beal, seconded by Hunsberger and carried, Prof. Beard was excused and the chairman and secretary were requested to express the sympathy and regrets of the Council to Prof. Beard.

111. Committee on Finance. Chairman Bradley submitted a verbal report that the important work of the Committee had been given prompt and careful attention. The report was approved, on motion of Eberle, seconded by Day and carried.

112. Committee on Property and Funds. Chairman Adams submitted the following report:

"In accordance with Article VI of Chapter IV of the By-Laws of the Council, the Committee on Property and Funds submits its report.

"The Committee recommends to the Council the following banks and safe deposit vaults:

DEPOSITORIES FOR FUNDS.

"The Baltimore Trust Company, Baltimore, Md.
"The Maryland Trust Company, Baltimore, Md.
"The Merchants and Newark Trust Company, Newark, N. J.
"The Boston Penny Savings Bank, Boston, Mass.

DEPOSITORIES FOR SECURITIES AND RECORDS.

"The Baltimore Trust Company, Baltimore, Md.—Safe Deposit Boxes.
"The Maryland Trust Company, Baltimore, Md.—Safe Deposit Boxes.

"The Committee is pleased to report that interest has been paid on all securities owned by the ASSOCIATION. No securities have matured during the year. The U. S. Treasury bonds, 3%, due 1951–1955, depreciated in value following their purchase but have recently increased and are expected to be worth par value by the time they are required for payments on the construction

of the Headquarters Building. The treasurer is keeping a strict account of all investments for the Headquarters Building and Property. The amount to August 1, 1932, was $230,907.37.

"It will be recalled that the late Franklin M. Apple of Philadelphia, Pa., made the AMERICAN PHARMACEUTICAL ASSOCIATION a beneficiary under his will. In April of this year, the ASSOCIATION was advised by the Integrity Trust Company of Philadelphia, successor to the Columbia Avenue Trust Company, that in accordance with Mr. Apple's will the residuary personal estate was awarded by adjudication to the Company to be held in trust to pay the net income to the Testator's Father and Mother, and the survivor of them for the term of their lives and after their deaths the principal was to be paid to the ASSOCIATION. It was further advised that the Trust Fund for Ella P. Apple was terminated by reason of her death on March 9, 1932, her husband having pre-deceased her and that in accordance with the terms of Mr. Apple's will, the fund is awarded to the ASSOCIATION.

"Later and through the firm of Graham and Gilfillan, Philadelphia, the Integrity Trust Company paid $1600.02 on account of principal and $7.03 on account of residuary income, in accordance with the orders of the Orphan's Court of Philadelphia County on Monday, May 2, 1932, to which court the audit was submitted.

"The treasurer has deposited this amount and holds the fund subject to the disposition of the Council."

The report was received on motion of Beal, seconded by Arny and carried, and the chairman was directed to appoint a committee of three members of the Council, of which committee he was to be a member, to consider the most appropriate means of recognizing the generosity of Mr. Apple and his splendid support of the ASSOCIATION, and the final disposition of the fund. The chairman appointed as the other two members of the Committee, Secretary Kelly and Treasurer Holton.

113. Committee on Recipe Book. Chairman Lascoff read the following report:

"Your chairman begs to submit the following report on the Recipe Book for the year 1931–1932.

"During the past year, circulars were distributed and 747 books were sold.

"I submit herewith a summary of sales of the book up to June 1932.

Year ending Dec. 1929	1898 were sold
Year ending Dec. 1930	691 were sold
Year ending June 1931	877 were sold
Year ending June 1932	747 were sold

"Stock on hand as of June 1, 1932, was 698.

"The Committee is very desirous to revise the A. PH. A. Recipe Book and to have the second edition in print. However, this cannot be done until the N. F. is completed, which will be about 1936.

"A number of formulas will be deleted, a large number will be added and index will also be revised.

"Your chairman has written to members of the committee and has received their comments. Care must be taken in revising this work and corrections made in order to avoid later criticism. In this connection, I must say that very little or hardly any material criticism on this work has been found, considering the fact that 1561 formulas appeared in the book.

"At the Miami meeting the By-Laws were amended by an addition to Chapter VIII which places the Committee on Recipe Book on the same basis as the Committee on National Formulary. The council elected the present members to constitute the committee for the current year with the present chairman as chairman. The thought was expressed that a second series of the Recipe Book might be issued with such corrections in the plates as might be necessary and defer the preparation of a new edition until the National Formulary is nearer completion. The importance of the Recipe Book as supplemental to the U. S. P. and N. F. is being more generally recognized.

"As is the case with any book published, I have received various criticisms from Pharmacists and also from committee men. Almost all of these criticisms were constructive.

"There were no objections to those formulas already included, but only suggestions as to new formulas or calling our attention to typographical errors.

"One Pharmacist writes in to point out an error on page 205 of the Recipe Book in the formula for Compound Benzoin Inhalant. We note that in the formula the figures read 100 cc. and in the directions they read 1000 cc.

"Another Pharmacist asked whether there is any book on the market which describes the uses and actions of all the formulas in the Recipe Book. Your chairman replied that there is no pamphlet available which describes anything concerning therapeutic action of the Recipe Book formulas. It is contrary to the principles of the AMERICAN PHARMACEUTICAL ASSOCIATION to recommend or suggest any information of this nature. The Recipe Book is intended as an aid to physicians in their prescription work and to the pharmacist as a convenient reference in filling physicians' orders. Any information as to therapeutics would invite counter prescribing, which is decidedly contrary to the ethics of this ASSOCIATION.

"Another Pharmacist writes that the book is good and is very satisfactory. However, it is not just what he has been looking for. He suggests that were some publishing firm to get out a book of formulas of test solutions and stains indexed according to the authors' names it would surely be a boon to the practicing pharmacist. The answer to him, in part, was this: 'No doubt you have noted the section of the Recipe Book given to laboratory reagents, test solutions, and stains. There are about 70 such formulas, selected for the frequency with which they are used. To have included every known formula would have meant the exclusion of many popular formulas in other sections of the book. However, I can definitely assure you that, in the revision of this first edition, careful consideration is going to be given to extending this section of the Recipe Book so that one may be assured of finding practically every commonly used stain, solution, etc.'

"One Pharmacist in Oklahoma returned the book for the following reason: It does not give dosage and directions how to use the different preparations. The answer was the same as to the pharmacist previously mentioned. The reason given also included the fact that these formulas were available for preparations commonly called for and prescribed to-day, which are not otherwise handy for reference.

"A comment from a pharmacist, a Mr. Harry Fries, concerning Alopecia Lotion No. 1 and also Phenol Gargle follows: The former results in a green sedimentation on top of the liquid which makes it non-dispensable, and the latter having the directions of diluting it with an equal volume of water make it entirely too strong and viscid for popular use. I wish that you would comment on these to me with a reply.

"My reply was as follows:

" 'In reference to your comment on the Phenol Gargle of the Recipe Book—this formula is used by a very prominent throat specialist, and is being extensively prescribed to-day. I shall be glad to take up, during the revision of the present edition, the advisability of making a greater dilution than equal parts of water and the gargle.

" 'With regard to the Alopecia Lotion No. 1, this is one of the group of formulas being used in leading hospitals. This, of course, is adequate recommendation for it. I have made up a sample of this lotion and let it stand for a day. There was no noticeable change. This sample is being mailed to you under separate cover. Of course, in actual dispensing, this product should be put in a dark bottle. I have used a colorless bottle for convenience in inspection. Resorcin is prone to become discolored.'

"A Pharmacist writes that he cannot find a formula for a 'hog worm oil' preparation in the Book. As your chairman has stated before, not all formulas can be included in the first edition. However, a formula was sent to him covering his question. In my opinion such formulas should not be included in the Book.

"Dr. Kelly wrote to the Bureau of Medicine & Surgery of the Navy Department in Washington advising them of our Recipe Book. He advised the bureau that reference is made to the Recipe Book in the Standards Year Book issued by the U. S. Department of Commerce. The following in reference to the Recipe Book:

" 'AMERICAN PHARMACEUTICAL ASSOCIATION Pharmaceutical Recipe Book, First Edition. Provides formulas for pharmaceutical preparations that are not recognized in the U. S. Pharmacopœia or the National Formulary. It is not recognized as standard in the enforcement of the Federal food and drugs act.'

"Now we come to the suggestions of the various members of the committee.

"Dr. Kilmer agrees with your chairman that there should be a Table of Solubilities and a

Dose Table, together with a Table of Antidotes for Poisons. When the Book was issued, he writes, he called our attention to some discrepancies in the titles. He also called attention to and succeeded in correcting, certain titles which are under the ban by the Food and Drug Department. Dr. Kilmer very graciously forwarded to your chairman a list which contained the objectionable and questionable titles.

"Dr. Gathercoal writes to suggest that it is his opinion that the Committee on Recipe Book should follow the policy adopted by the Revision Committee on National Formulary and not deliberately include formulas for preparations that are official in the U. S. P. The Committee on Recipe Book should adopt the same policy in regard to the N. F. There will be a considerable number of deletions from the N. F. that would be suitable for inclusion in the Recipe Book. It is a question, however, whether such formulas should be included in the Recipe Book while they are still official in the N. F. He also enclosed a list of the tentative deletions from N. F. V that we may have them in mind for future inclusion in the Recipe Book. He thinks that it would be well not to include these in the Recipe Book until the New N. F. is actually out and official.

"Dr. Fantus writes that the pharmacists are not as well informed as they should be on such matters as ant eradication or 'how to free rose bushes of aphis.' He suggests that The National Government Department of Agriculture could be very helpful in the elaboration of such a chapter. He further goes on to say that somewhere in the introduction of the book a declaration should be made to the effect that: 'When the title includes the names of diseases, this does not constitute a recommendation for the use of such an agent in such a condition; but it merely represents the name by which the article is popularly known.'

"Dr. Scoville sends in some very constructive criticism.

" 'I would like to see a thorough consideration of the scope of the book before another edition is accomplished. I have felt that it should contain tables and other information that would be of use to the dispensing pharmacist.

" 'For instance, I would like to have considered a table of Synonyms—as complete as it can be made, particularly of pharmaceutical preparations. A concise presentation of the facts that the pharmacist must know about the Narcotic Law and the Liquor rulings. A table of percentage solutions, poison laws and rulings, poisons and antidotes, first-aid treatments and equipment, alcohol regulations, labelling regulations, etc., as well as your Solubilities and Doses, both of which are now in the N. F. We ought to avoid any conflict of contents in these two books. A general consideration of scope and contents by the Committee would be advisable before the revision is seriously begun.

" 'All this is suggestion. When we consider that our Recipe Book contains about 1500 formulas and nothing more, and that Vol. 1 (with another volume to come) of Pharmaceutical Formulas of England contains (calculated) between 17,000 and 18,000 titles besides information on the lines that I have suggested, it implies that we have some way to go to keep up.'

"Dr. Scoville's letter is very opportune to the occasion and we will allow the committee to go over it and apply his suggestions where available.

"Dr. Hilton suggests that the formula for Unguentum Calendula, submitted, directions should accompany same—directing that the Fluidextract should be evaporated on a water-bath to a thick extract to remove the alcohol and the greater part of the water—this method makes a much better ointment. Dr. Hilton also suggests that after the contents of the book have been determined a Committee should consult with the Food and Drug Administration and obtain their views, the same as is now being done by the Pharmacopœia and National Formulary committees.

"Dr. Charles H. Stocking writes concerning the two formulas for Harrington's Solution. The formula on page 273 calls for fifteen times as much corrosive mercuric chloride as is found in the formula on page 130. He realizes that these formulas are to be used for different purposes and that they are listed in different divisions of the Recipe Book. However, it occurs to him that there should be a change in caption for one or both of these formulas in order to avoid the possibility of confusion arising in dispensing the same. If one were labeled 'dilute' and the other 'concentrated' I have a feeling that the ambiguity would be obviated.

"Dr. Langenhan writes some very constructive criticism. Allow me to quote, in part, from his letter:

" 'This question has been on my mind ever since the first page proofs of the Recipe Book

appeared, and that is: Cannot the arrangement of the book be improved so that it may be easier to find items? At present I find it necessary to use the general index almost entirely. I refer mainly to the two sections known as Pharmaceutical Formulas and Hospital Formulas. Both contain ointments, pills, emulsions, et cetera. What is the difference between the two groups? I understand, of course, how the division originated, but is it necessary, especially since it brings about confusion? For example, both sections 1 and 2 contain formulas for creosote carbonate emulsions—Liquid Petrolatum emulsions, etc. Section 1 contains 40 elixirs, and section 2 contains 5 elixirs. I fail to see the value of the division but can see decided advantages in having all elixirs together, all emulsions together, etc., both from the viewpoint of a textbook in schools of pharmacy and as a reference book in drug stores when, for example, the pharmacist wishes to dispense creosote carbonate in form of an emulsion. It is true one can use the general index, but in this present age of haste and convenience, the average person prefers opening the book in one place and finding information grouped rather than spread throughout the volume.'

"A number of pharmacists who have purchased this book were highly satisfied and claimed that it is superior to any formula book on the market to-day. It is more dignified and contains more useful formulas for the pharmacist. Others suggest that certain formulas are missing. Dr. Kelly writes that he has received several requests for formulas for solutions for show globes. One inquirer mentions that formulas for this were not mentioned in the Recipe Book. I am submitting 23 formulas which were collected by Editor Eberle from various sources.

"After my report was completed, I received a letter from Dr. Clayton, dated August 2nd. He writes, 'The following notations are not in the nature of typographical errors, but rather, suggestions, the following of which, I believe will make a second edition of the Recipe Book a little better than the first. My suggestions are not intended to be hypercritical and I realize that the present edition is far better than anything I could have produced, but nevertheless, you may find something worth while in what follows.

" 'My first suggestion is that an alphabetical arrangement under Latin titles would be preferable to the present arrangement, and other suggestions follow in order as they are brought to my mind in the following pages. I am only desirous that the Pharmaceutical Recipe Book shall be so accurate that no one will have any excuse for error in the use of formulas contained in it.

" 'Also, since we are urging pharmacists everywhere to become better posted on the professional aspects of their calling, I feel that something can be accomplished along this line by inclusion in the Recipe Book of information relative to the uses of the various laboratory and diagnostic reagents in addition to their formulas, for many physicians to whom such reagents might be sold, will be none too well posted with relation to their uses, and very naturally, will turn to the pharmacists from whom they are obtained for information.'

"He sent in a large list of suggestions which will be mimeographed and sent to the members of the committee.

"In conclusion, I am taking this opportunity to thank the members of the committee for their different suggestions and criticisms.

"I wish to thank Dr. Kelly for his work in connection with the distribution and sale of the Pamphlets and Books. I also thank Editor Eberle for his 23 formulas for show globes which he collected from various sources.

"I wish to say that the next Edition will be carefully revised, and all suggestions given by the members will be taken into full consideration.

"I also thank once more all of the members of the A. PH. A. who have shown their interest and coöperation in our work in behalf of the Recipe Book."

The report was received with the thanks of the Council to Chairman Lascoff for his excellent report, on motion of Day, seconded by Beal and carried. Members of the Council made certain suggestions with reference to the Recipe Book which the chairman accepted with thanks.

114. Committee on Publications. Chairman DuMez read the following report:

"Your Committee on Publications respectfully submits the following report on its activities during the past year, and on the status of the ASSOCIATION'S publications.

"*Journal:* The total expenditures for the publication of the JOURNAL for 1931, including the Editor's salary, were $20,364.23 ($15,364.23 + $5000.00). The total expenditures for 1930 were $20,499.50 ($15,499.50 + $5000.00) which represents a decrease of $135.27. The receipts of the JOURNAL for advertising, subscriptions, sale of single copies, reprints, etc., for 1931 were

$9469.01. The subscription credit received for non-headquarters building members amounted to $6012.66, making a total of $15,481.67. The total receipts for 1930 were $15,679.52. The receipts have, therefore, decreased by $197.85.

"The total expenditures of $20,364.23 less the receipts of $15,481.67 show the cost of the JOURNAL for the year to be $4882.56. The net cost for 1930 was $4819.87. The cost of the JOURNAL has, therefore, increased by $62.69. This increase is to be attributed largely to a falling off in the advertising contracted for, since the subscription credit was $256.06 greater than for the preceding year. This statement is made solely for explanatory purposes and is not intended as a criticism of the management of the JOURNAL. There was bound to be some decrease in the advertising obtained in view of the drastic curtailment of expenditures made in all lines of business during the past two years.

"The JOURNAL was again printed and distributed by the Mack Printing Company of Easton, Pa.

"Further details relative to the management and publication of the JOURNAL will be presented by Editor Eberle.

"*Year Book:* Volume 18 of the YEAR BOOK covering the calendar year 1929 was distributed in the early part of January 1932. Three thousand copies were ordered and approximately 2500 of these have been distributed.

"The manuscript for volume 19 is completed and it is recommended that the contract for printing, binding and distributing the same be awarded to the Lord Baltimore Press of Baltimore, Maryland, on the basis of their estimate of August 15, 1932.

"As in the preceding several years, certain journals were again abstracted for the Committee of Revision of the United States Pharmacopœia, to cover the cost of which the Board of Trustees of the Pharmacopœial Convention contributed the sum of $1000.00.

"*Index of Proceedings and Year Books, 1903–1925:* 1047 copies of the Index were printed and bound. Up to July 1, 1932, 359 copies had been sold or otherwise disposed of, leaving a stock on hand of 688 copies.

"*National Formulary, V:* Up to June 1, 1932, a total of 45,627 copies were printed and bound in buckram and 500 copies were bound in leather. Of the copies bound in buckram, 44,953 had been sold and 80 copies had been distributed gratis. Of the copies bound in leather 135 copies have been sold and 12 copies have been distributed gratis. There were sold since June 1, 1931, 4257 copies bound in buckram and 1 copy bound in leather, leaving a stock on hand of 594 copies bound in buckram and 353 copies bound in leather.

"Permission to use portions of the text of the National Formulary V, for reproduction in books and pamphlets was granted to the following during the year: C. W. Ballard for a laboratory manual in botany and pharmacognosy; Thomas L. Stedman for a medical dictionary for nurses; J. R. Blayney for a textbook on dental pharmacology and therapeutics; J. W. Millar for a book on pharmaceutical assaying; The N. A. R. D. for a pamphlet on important U. S. P. and N. F. preparations; and Sister Alma of St. Thomas Hospital of Akron, Ohio, for a textbook on materia medica for nurses.

"*Pharmaceutical Recipe Book:* Up to June 1, 1932, 5000 copies of the Recipe Book were printed and bound. Of this number, 4213 copies have been sold and 89 complimentary copies have been distributed, leaving a stock on hand of 698 copies. The stock on hand at the same time last year was 1445 copies which means that 747 copies were sold during the year.

"In conclusion your Committee desires to again express its appreciation to the members of the ASSOCIATION who have coöperated in promoting the interests of its publications and to extend thanks on behalf of the ASSOCIATION to the various pharmaceutical journals published in this country for their coöperation in giving publicity to the activities of the ASSOCIATION and its publications."

On motion of Beal, seconded by Day and carried, the report was received with the commendation of the Council for the diligent and effective work done by the Committee.

115. Contract for Printing, Binding and Distributing the Year Book, Volume 19, for 1930. The recommendation of the Committee on Publications that the contract be awarded to the Lord Baltimore Press, Baltimore, Md., on the basis of their bid of August 15, 1932, was approved on motion of Arny, seconded by Bradley and carried.

116. Editor of the Year Book. Editor DuMez read the following report:

"Volume 18 of the YEAR BOOK covering the calendar year 1929 was completed in December 1931, and was distributed in the early part of January 1932.

"The manuscript for volume 19 covering the year 1930 has been completed and is ready to go to the printer just as soon as the contract is awarded. If printers may be expected to keep promises, there is no reason why the volume should not be ready for distribution by the first of the year.

"All of the assignments for volume 20 covering the year 1931 have been sent to the collaborators and a considerable amount of abstracting has already been completed. It is hoped that the manuscript will be ready for the printer before the end of the year, but I am not making a definite promise that this will be done as it seems that something always intervenes to hold us back."

The report was received with the thanks of the Council to Dr. DuMez, on motion of Day, seconded by Beal and carried.

117. Committee on Standard Program. Chairman Hilton submitted a verbal report outlining the work of the committee for the year. He complimented Dr. Bradley for his special assistance in visiting Toronto in February and making arrangements for the 1932 meeting, and recommended that Dr. Bradley be reimbursed for his expenses in this connection. On motion of Arny, seconded by Beal and carried, the report was received and the recommendation approved.

118. Committee on National Formulary. Chairman Gathercoal read the following report:

"In the report submitted to the Council one year ago, mention was made of five general lines of work being pursued by the N. F. Committee.

"We would report progress along each of these lines during the past year, as follows:

(1) RESEARCH INVESTIGATIONS.

"The study of the scientific principles of extraction as proposed by Dr. Scoville has been difficult to establish, though plans for this research have been under discussion in the A. PH. A. Committee on Research throughout the year. The plan as now proposed is to offer $1000 from the Research Fund as an award to a graduate student for one year's work on a critical study of the drug itself in relation to extraction. This study is to be based on the physical, chemical and botanical characteristics of drugs, with special reference to permeation of cell walls by selected menstrua; on the swelling of cell contents during maceration with selected menstrua; and on the time required for selected menstrua to dissolve and remove the active principle from the cell. It is hoped that this work will begin this fall.

"The work on ampuls under the guidance of Dr. Fantus has progressed in a splendid manner. Out of the work a complete revison of the Chapter on Sterilization has been prepared and offered to the General Committee for discussion. Likewise a much improved Chapter on Ampuls has been presented to the General Committee and an improved type of individual monograph for ampuls has been devised and presented. Many of the individual monographs on ampuls are well under way. About 25 ampul preparations are proposed for inclusion in N. F. VI.

"Work still continues under the direction of Dr. Langenhan on the U. S. P. and N. F. Liquors. A number of important conclusions have been submitted to the general committees and many of the individual monographs have been submitted.

"Investigative work on the chemical monographs under the guidance of Dr. Jenkins still continues and many of the chemical monographs bearing the stamp of this work have been submitted.

"The last three pieces of work have cost about $1000. This money has come in part from the A. PH. A. Research Fund, and in part is charged to the general expense of revision."

(2) THE GENERAL PRINCIPLES OF REVISION.

"The general principles for the guidance of the N. F. Revision Committee have been completed with the exception of a careful editing for English construction.

"It is planned to present these general principles to the Council for approval before they become a part of N. F. VI."

(3) THE SURVEYS ON THE EXTENT OF USE OF MEDICINES.

"These surveys are completed or nearing completion.

"The two surveys made in hospital pharmacies, prescription drug stores and general drug stores of the United States on the 'Extent of Use' of N. F. preparations and of preparations pro-

posed for inclusion in the N. F. are both being extensively used in determining admission to the N. F. The first of these surveys has been published in the JOURNAL OF THE A. PH. A.

"Likewise the 'Prescription Count' or survey to determine the number of physicians' prescriptions filled annually in the drug stores of the United States has been of very great interest. While figures from different localities may vary somewhat, the average of the United States is close to 2 prescriptions per year for each inhabitant and therefore approximates 250,000,000 prescriptions annually. This does not include medicines dispensed in hospitals and clinics nor in physicians' offices.

"The U. S. P.-N. F. Prescription Ingredient Survey is nearly completed and will be published the latter part of this year. This is a monumental piece of work. It includes the reading of nearly 122,000 prescriptions, *viz.:* 40,000 in New York State, 24,000 in California, 22,761 prescriptions in Maryland and 35,000 (approximate) in Missouri. When one realizes that it requires about 10 hours of difficult tiring work, by one possessing a high degree of prescription experience, to read and list the items in 1000 prescriptions, one begins to realize the magnitude of this task.

"In New York State, Dr. J. Leon Lascoff, Professor Leon Monell and Mr. Harry Harris actually did the work or supervised it. In California, Miss Eda V. Laird, under the supervision of Mr. John Culley, read all of these prescriptions. In Missouri, trained prescription men under the direction of Mr. Frank A. Delgado read all of the prescriptions. In Maryland only, was the work entirely voluntary. Here, however, Mr. Chas. E. McCormick read all of the 8000 prescriptions in the retail stores of Hynson, Westcott and Dunning and other splendid men gave of their time and talent in Baltimore stores and throughout the State.

"The reading of the prescriptions and listing of the ingredients is only the foundation for the final reports. Much time and tedious work is required to transfer the items in the lists to the 4000 alphabetically arranged cards on which the correct name of the item, its synonyms and its standing as to U. S. P., N. F., N. N. R., manufacturer, etc., is placed. Very splendid pharmaceutical training is necessary for this work, to avoid duplications and other difficulties due to the use of abbreviations and to inaccuracy and confusion in the naming of the ingredients in the prescriptions.

"Finally the actual copy for the report must be made up. So many questions have arisen regarding the nature of this report that the matter has been put up to a committee of five. A number of different reports have been suggested and all of these seem very desirable. Probably twenty-five interesting reports could be drawn from this data, if time and energy were available. The four State reports are being published separately; that of New York State in the A. PH. A. JOURNAL, of Maryland in the *Maryland Pharmacists*, of California in the *Pacific Drug Review*, and of Missouri in a Middle West drug journal. A special report on Fluidextracts has been published and similar reports on Glandular products, on Tinctures and on Elixirs are about ready.

"We hope to prepare one report in strictly alphabetical form for the use of the two Revision Committees, pharmaceutical teachers, laboratory directors, etc. Another report arranged from a therapeutic standpoint and much shortened by the elimination of the less popular items is designed for publication in a leading medical journal. A third report in which the items are arranged according to their extent of use is designed for retail pharmacists as a guide to prescription stocks, etc. A fourth report in which attention is given to official items as compared with unofficial and proprietary items would also be of distinct interest to all of the medical professions.

"As to the cost of this Survey, about $450 of the $500 appropriation made by the Board of Trustees of the U. S. P. has been spent. It has been almost impossible to separate the expense of the Survey as borne by the N. F. from the general revision expense, but probably the full $500 of the N. F. appropriation has been spent. The value of this data, however, is much greater to the N. F. Revision Committee than to the U. S. P. Committee. The work has all been done in the office of the Chairman of the N. F. Committee and under his direct supervision. Thus it is but fair that the N. F. should bear the major share of the expense."

(4) THE ADMISSIONS INTO N. F. VI.

"Of the 778 individual monographs and general chapters in Parts I and II of N. F. V, 486 have been admitted to N. F. VI. The matter of admissions, however, is not closed and there may be a further careful consideration of N. F. V items.

"The list of deletions from U. S. P. X has not as yet been published. The items in this list will be carefully considered for admission to N. F. VI.

"Some consideration has already been given to new items proposed for admission to N. F. VI. Two forms of dosage preparations, namely, ampuls and tablets, have been under consideration by both the U. S. P. and N. F. Committees. Recent word from Chairman Cook indicates that the U. S. P. Sub-committee on Scope has not admitted either of these classes of preparations, but has recommended them to the N. F. Committee. Upon the recommendation of Dr. Fantus and his Sub-committee, 24 ampul solutions were presented to the N. F. Committee and 21 were approved for admission.

"A number of other new items have also been recommended by various Sub-committees and approved by the General Committee. It is very likely that the 290 items not accepted from N. F. V will be nearly if not quite made up by new items that are more modern and more popular."

(5) THE WORK ON INDIVIDUAL MONOGRAPHS.

"Much progress has been made in this work. The monographs are first critically considered and revised by members of the Sub-committees, then published in the Sub-committee letters for criticism, then revised and recommended to the General Committee and published in the N. F. Bulletin where they are subject to criticism not only from all members of the Committee, but from many interested and competent persons outside of the Committee, who receive the Bulletin.

"The following tabulation shows the progress of this work by the Sub-committees:

Sub-committee.	Subject.	Chairman.	N. F. VI Items.	Monographs Completed.
No. 1	Pharmacognosy	Dr. Newcomb	84	0
No. 2	Chemicals	Dr. Jenkins	50	45
No. 3	Solution Preparations	Dr. Langenhan	107	76
No. 4	Extractive Preparations	Dr. Scoville	118	0
No. 5	Solid Preparations for Internal Use	Mr. Becker	41	17
No. 6	Solid Preparations for External Use	Prof. Saalbach	44	22
No. 7	Miscellaneous	Prof. Nichols	42	22
No. 8	Biologicals	Dr. Fantus	0	0

"Dr. Newcomb, Sub-committee No. 1, has been giving his attention to the vegetable drugs of the U. S. P., and when these are out of the way, plans to take up the N. F. drugs. He will have relatively few new drugs to be admitted, though several from U. S. P. X.

"Dr. Jenkins has done a remarkably fine piece of work. He still has, however, a great deal of work on descriptions, tests and assays of galenicals. There will be, probably, quite a number of new chemicals admitted to the N. F. as well as several from U. S. P. X.

"Dr. Langenhan has done very fine work though he has a number of serious problems under consideration. His Sub-committee already has begun the study of new items.

"Dr. Scoville reports that practically all of the changes proposed in the monographs of the extractive preparations have been discussed and passed upon by his Sub-committee, and when his monographs are submitted practically the whole group will come in at once.

"Mr. Becker has made splendid progress on the pills and pharmaceutical salts. We plan to place the consideration of tablets in charge of some one who has had experience with the manufacture and assay of tablets.

"Prof. Saalbach is making excellent progress with his Sub-committee work.

"Prof. Nichols has not only completed 22 of the 42 items assigned to his Sub-committee, but Dr. Fantus, in charge of Ampuls has the monographs well along for the present N. F. ampuls and a considerable number of new ampul preparations as well. The ampuls also belong to Prof. Nichols' Sub-committee.

"Dr. Fantus found no monographs on items that could be classed as biologicals in N. F. V. However, he and his Sub-committee have accomplished an extensive study of the ampuls. He took an active part in a conference recently held in Chicago to consider glandular products in relation to the U. S. P. and N. F. and expects to lay before his Sub-committee a number of suggestions regarding the admission of these products into the N. F. He has laid before his Sub-committee the extensive section on biological stains and diagnostical reagents as found in Part III of N. F. V.

He is also giving serious study to some of the Vitamin materials and to bacteriological sera and related products."

N. F. COMMITTEE MEETING IN 1933.

"It would seem very desirable, in fact essential, for the N. F. Committee to hold a conference in 1933. By the middle of next year we must reach final decision upon the admissions into N. F. VI. By that time work on the N. F. V monographs and the U. S. P. X monographs that are admitted to N. F. VI will be practically completed and can be passed upon in conference. Plans for consideration of the new items admitted must be carefully drawn and passed upon. All monograph work should be completed before July 1st of 1934."

EXPENSES OF THE CHAIRMAN'S OFFICE.

"The year 1933 will probably be the busiest year in the Chairman's Office as regards this revision. There is no question but that we can continue to use office space without expense, but there is much doubt as to whether we can count upon the University of Illinois to furnish stenographic help for the N. F. Revision Committee during the coming year as in the past year. It will be necessary to meet part time expense for a stenographer. Another item of rather serious import is the increase in cost of postage.

"However, every effort will be made to keep down the expense to a minimum. No new surveys nor the collection of statistical data will be undertaken."

After discussion, Bradley moved that the report be received with the appreciation of the Council for the spendid work done by the Committee. The motion was seconded by Beal and carried.

119. Committee on Research. The following report was read by Chairman Arny:

"Your Committee transacted business through the year by means of nine bulletins covering 46 mimeographed pages. This volume of correspondence became necessary because of the animated discussion relative to the proposed comprehensive research on extraction.

"It turned out that while the discussion was important and edifying, none of the several mail ballots were decisive: hence, decision was postponed until our Toronto meeting. This meeting of the Research Committee was held at Royal York Hotel on Saturday evening, August 20th, at which nine of our fifteen members were present and voting. Our unanimous findings as to the proposed research on extraction follow:

"*1.* We recommend to the Council and to the ASSOCIATION, that the proposed research on extraction be inaugurated with a 1932–1933 grant of $1000 from the AMERICAN PHARMACEUTICAL ASSOCIATION Research Fund.

"*2.* That this grant is intended to finance one year of the research and that it will be subject to renewal in future years at the discretion of the Research Committee, with approval of the Council.

"*3.* That the scope of the research on extraction will be substantially that outlined by W. L. Scoville in a paper published in the September issue of the AMERICAN PHARMACEUTICAL ASSOCIATION JOURNAL.

"*4.* That the 1932–1933 grant of $1000 be awarded by vote of the entire AMERICAN PHARMACEUTICAL ASSOCIATION Research Committee, preferably to a professor in a recognized college of pharmacy; said professor to possess proper qualifications as a research worker and is willing to agree to use the grant for employing a research helper; said helper to possess at least the B.S. degree and preferably to be pursuing the research in partial fulfilment of the requirements of the Doctor degree in the institution where the research is conducted.

"*5.* While the award is to be formally made by the entire Committee on Research, subject to approval of the Council; details of negotiation and of procedure throughout the year are entrusted to a sub-committee of five, consisting of the chairman of the Research Committee, chairman of the U. S. P. Revision Committee, chairman of the N. F. Revision Committee and also W. L. Scoville and George D. Beal.

"*6.* If possible, the award will be made before October 1, 1932, and the research be commenced during the college year 1932–1933. Your Committee on Research requests permission of the Council to announce the name of the candidate for the award at the earliest possible date; either this week or later; and express the hope that the Council will have the authority to decide the grant by mail ballot, if decision is not reached by the Research Committee during the week of August 21st.

"*7.* Your Committee also asks permission to invite requests for the $1000 grant of 1932–1933; a tentative draft of such an invitation being attached to this report.

"It will be recalled that at our Miami meeting of 1931 the Council authorized the appropriation of $1100 from the A. PH. A. Research Fund to cover the first year of the proposed research on extraction. For reasons stated above, this sum of $1100 has not as yet been expended. If it is still available, your committee recommends that the following awards be made from this money:

"*1.* To Dr. Bernard Fantus and to Miss Hattie Dyniewicz, both of Chicago, Ill., for a study of liquid forms of medicaments for oral use. $500.00.

"*2.* To Dr. John C. Krantz, Jr., of Baltimore, for purchase of chemicals and supplies in his research in (*a*) moisture content of light magnesium oxide, (*b*) assay of salicylates and benzoates, (*c*) metabolism of derivatives of mannitol, (*d*) studies on digitalis extraction. $150.00.

"Your Committee represented the AMERICAN PHARMACEUTICAL ASSOCIATION at the meeting of the National Conference on Pharmaceutical Research held in Toronto on August 20th. Transactions of the Conference will be reported in due time; so your Chairman will only recommend that the A. PH. A. continue its membership in the Research Conference during 1932–1933.

"In conclusion, your Chairman will point out that the terms of two members of the Research Committee—Messrs. J. A. Koch and A. Viehoever—expire this year."

After discussion, it was moved by Hunsberger, seconded by Adams and carried, that the report be received and the first three recommendations be concurred in.

On motion of Bradley seconded by Adams and carried, recommendation No. 4 was approved and the Committee on Research was authorized to make the appointment when the Committee is satisfied with the selection.

Chairman Arny requested information as to the disposal of the income of the Research Fund for 1931. It was moved by Bradley, as Chairman of the Committee on Finance, that the award of the income referred to, on recommendation of the Committee on Research, be approved. The motion was seconded by Beal and carried.

On motion of Day seconded by Hunsberger and carried, the awards of $500 to Dr. Bernard Fantus for a study of liquid forms of medicaments for oral use and of $150 to Dr. John C. Krantz, Jr., for the purchase of materials for use in certain research work, as recommended by the committee was approved, as well as the recommendation that membership by the committee be continued in the National Conference of Pharmaceutical Research.

120. Exhibit by the J. B. Lippincott Company. Mr. Bacon of this Company was introduced to the Council by Prof. E. Fullerton Cook who explained that the Company desired to exhibit, during the meeting, certain books for which they were distributors. After discussion it was moved by Beal that the Council has no objection to the exhibit if there is no objection by the officials of the Canadian Pharmaceutical Association, and that the Committee on Standard Program be requested to consider a policy with respect to exhibits at the annual meetings and report to the Council. The motion was seconded by Arny and carried.

121. Editor of the Journal. Editor Eberle read the following report which was received on motion of Hunsberger, seconded by Beal and carried:

"The report of the Editor presented herewith deals with the business of 1931 and, as reports of previous years, is compared with those of 1930.

"The expenses of 1930 were $15,499.39 not including the Editor's salary; the receipts were $9922.92. Deduction of the receipts, not including membership subscriptions, from expenses shows a net cost of $5576.47. Add the Editor's salary and we have a cost of $10,576.47. The credit on membership subscriptions, not Headquarters members—one-half of the dues for the year less 20% for overhead, which for 1930 is $5756.60, deducted from gross cost $10,576.47, leaves $4819.87 net cost including the Editor's salary or 87 cents net per volume of the JOURNAL. An average of 5500 copies are printed monthly.

"The expenses of 1931 were $15,364.23, not including the Editor's salary; the receipts were $9469.01. Following the plan of the foregoing so as to make comparison: Deduct the receipts, not including membership subscriptions from expenses shows a net cost of $5895.22. Add the Editor's salary, and we have a cost of $10,895.22. The credit on membership subscriptions, not Headquarters members, less 20% for overhead, which for 1931 is $6012.66, deducted

from the gross cost, $10,895.22, leaves $4882.56 net cost, including the Editor's salary; an average of 5444 copies were printed monthly, making a cost of about 89¢ per volume.

"The difference in net cost is $62.69 more for 1931 than 1930. Detailed comparative costs of 1930 and 1931: The number of copies of the JOURNAL printed in 1930 was 66,000; in 1931, 65,330. Considerably more 8 point matter was printed in 1931 than in 1930; the purpose was to bring the larger amount of material embodied in the minutes in the issues of 1931; this, to that extent, increased the publication costs.

"The number of pages printed in 1930 was 1360; in 1931, 1366. The publication costs in 1930 were $10,871.58; in 1931, $11,031.35. Mailing costs of the JOURNAL in 1930 were $638.51; in 1931, $665.09; mailing back numbers in 1930 cost $21.70; in 1931, $25.70. Photographs and engravings other than included in Mack Printing Company costs in 1930 were $346.03; in 1931, $480.50—it was requested that more illustrations should be used in the JOURNAL. Binding JOURNALS in 1930 cost $27.25; in 1931, $24.00. Stationery and Office Supplies in 1930 cost $93.00; in 1931, $101.40. Hauling and Freight in 1930 cost $19.31; in 1931, $11.57. Clerical, including Professor Olsen's contributions to Department of Business Management, cost, in 1930, $1376.00; in 1931, $1356.50. Commission on Advertising in 1930 cost $678.05; in 1931, $634.15. Refund on overpaid accounts in 1930 amounted to $11.50; in 1931, $8.00. Reprints in 1930 cost $1049.50; in 1931, $698.27. Office Postage and Parcel Post in 1930 amounted to $257.59; in 1931, $236.83. Collection charges in 1930 amounted to 35 cents; in 1931, 10 cents. Purchasing old JOURNALS in 1930 cost $15.00; in 1931, $10.85. The total expenses of 1930 were $15,499.39; of 1931, $15,364.23; $136.16 more in 1930 than in 1931.

"Detailed comparative receipts of 1930 and 1931: The receipts for 1930 amounted to $9922.92; for 1931, $9469.01. Advertising in 1930 brought $6880.89; in 1931, $6537.13; the difference of $343.76 (less in 1931 than in 1930) is the result of consolidation of advertising firms; the amount was larger but reduced by securing some new advertising. Subscriptions in 1930 amounted to $1098.83; in 1931, $1050.71; in should be understood that we make every effort possible to bring subscriptions into memberships. Single copies brought in 1930, $152.37; in 1931, $303.31; bound volumes in 1930, brought $56.70; in 1931, $35.00. Reprints in 1930, brought $1080.76; in 1931, $727.26. Miscellaneous items in 1930 brought $653.25; in 1931, $815.60. In 1930, the National Association of Boards of Pharmacy contributed $250.00; in 1931, $257.50. The American Association of Colleges of Pharmacy contributed $300.00 in 1930 and the same in 1931. Binding JOURNALS in 1930, $3.25; in 1931, $1.50. In 1931 we received from the sale of the print—*The Laboratory*—$26.10. In 1930 there was contributed $50.00 by Prof. J. U. Lloyd toward the cost of printing an article by him and $50.00 was paid on the cost of an article by H. W. Youngken. In 1931 the Conference of Pharmaceutical Association Secretaries contributed $25.00 toward expenses of printing the minutes. Dr. Nyiri contributed $3.50 toward expense in revising his article. Prof. J. U. Lloyd contributed $50.00 toward the expense of printing his article, and $150.00 was contributed toward the expenses of the JOURNAL.

"The JOURNAL has contributed reprints of addresses and other papers for distribution to Pharmaceutical publications. The general idea has been continued in publishing the JOURNAL, but following the request of the ASSOCIATION more illustrations have been used. Considering the general conditions, the JOURNAL has held up remarkably well—there has been little falling off.

"The conditions for 1932 have been shown in the July report of the Editor to the Committee on Publications; the expenses of 1932 to August first are $50.58 less than in 1931; the receipts $205.37 less in 1932 than in 1931. We regret that it has been found necessary to reduce the contributions of the National Association of Boards of Pharmacy.

"The JOURNAL has continued in the work of publicity and correspondence shows results. Under Editorial Notes we have an invitation for readers to ask for information. On several occasions we have replied in these columns with assistance of Dr. S. L. Hilton, but most frequently the requests for information have been replied to in correspondence. The requests are becoming more frequent and on a number of occasions the service has received the appreciation of the correspondent. The Editor seeks to arrange each number of the JOURNAL in such a way that each of the divisions of pharmacy is represented and as far as possible reports of state and national meetings are made; this applies also to Local Branches, the Sections, Conferences and international organizations and the Association of Colleges of Pharmacy and of the National Association of Boards of Pharmacy.

"During the past year more reports of surveys have been printed, including prescription ingredient survey, the use of fluidextracts and of other galenicals. We have printed the report of Vitamin Assay Committee of the American Drug Manufacturers' Association.

"Prof. J. U. Lloyd contributed articles III and IV of Physics in Pharmacy; the members here know that these papers are the result of investigations of our veteran member about fifty years ago, the manuscript of which has been checked up by Dr. Ostwald and Dr. Heller. The illustrations of the articles were contributed by the author.

"A number of interesting and valuable historical articles were printed, most of these were illustrated. Quite a number of articles of the Scientific Section are helpful in U. S. P. and N. F. Revision.

"A number of exhibits at the American Medical Association and at various state medical and pharmaceutical bodies, are shown in several numbers of the JOURNAL and reported on; the Cinchona Tercentenary also received considerable attention.

"The minutes of the House of Delegates were printed as usual and distributed to the delegates and the publications; this applies also to the Conferences and the addresses of presiding officers, etc.

"A number of pictures used in the JOURNAL having historical value were enlarged to a size suitable for framing; among these are a misnamed picture showing a laboratory of a London Pharmacy; the late Dr. Frederick Power in his laboratory at Washington, and the ceremony of breaking ground for the Headquarters Building at Washington on July 1st.

"The Editor has brought with him some reprints, other monographs and pictures, the originals of which appeared in the JOURNAL."

122. Commission on Proprietary Medicines. Chairman Beal stated that the Commission had no formal report to make this year and that the Commission had under consideration certain studies that might be undertaken during the coming year. The work of the Commission was generally discussed but no action was taken.

123. Contact Man. Under the head of new business the recommendation of former President Christensen at the Miami meeting that the ASSOCIATION engage a contact man was given further consideration. It was moved by Beal, seconded by Hunsberger and carried, that the study of this question be continued.

124. Nomination of Honorary President, Secretary and Treasurer. On motion of Eberle, seconded by Arny and carried, the following were nominated to the House of Delegates for the respective offices named:

Honorary President, Charles F. Heebner, of Toronto, Canada.
Secretary, E. F. Kelly, of Baltimore, Md.
Treasurer, C. W. Holton, of Essex Fells, N. J.

125. Election of Honorary Members. Historian Eberle nominated the following: George Urdang of Germany; Hans Heger of Austria; F. Gladstone Hines of England; Herbert Skinner of England.

On motion of Beal, seconded by Arny and carried, the nominees were unanimously elected as Honorary Members.

126. Election of Members. The following applicants were elected as members, on motion of Bradley, seconded by Adams and carried: No. 328, Marshall Close, 515 Kilbourne St., Bellevue, Ohio; No. 329, Hugh Leslie Davis, 715 S. Wood St., Chicago, Ill.; No. 330, Alice Esther Garvin, 20 Lake Place, New Haven, Conn.; No. 331, James J. Gill, 1910 Westminster St., Providence, R. I.; No. 332, Henry H. Gregg, Jr., 4954 France Ave., Minneapolis, Minn.; No. 333, Paul J. Jepson, Newton, Iowa; No. 334, David Milford Zemlin, 541 S. 57th St., Philadelphia, Pa.; No. 335, Hugh P. Beirne, 615 Howard Ave., New Haven, Conn.

127. Annual Report of the Council to the House of Delegates. The Chairman and Secretary of the Council were authorized to prepare and submit the report, on motion of Adams, seconded by Day and carried.

There being no further business the Council adjourned.

THIRD MEETING OF THE COUNCIL.

The Third Meeting of the Council for 1931–1932 was held on Thursday forenoon, August 25, 1932, with the following members present: Hilton, Caspari, Arny, Bradley, Day, Dunning, Adams, Holton, Eberle, DuMez, Roach and Kelly.

The minutes of the Second Meeting were read and adopted as read.

128. Committee on Unofficial Standards. The report was read by the secretary in the absence of Chairman Krantz:

"*Organization:* Since the presentation of the 1931 report, the personnel of the Committee on Unofficial Standards of this ASSOCIATION has not been changed. The Committee is divided into two sections, a chemical section under the chairmanship of Dr. Hugo H. Schaefer, and a botanical section under the chairmanship of Professor E. B. Fischer. In addition to the regular members of the Committee there are serving in the capacity of consultants several associate members.

"*Activities Undertaken:* For 1932 the following monograph assignments were made by the chairman of the Committee. 1. Psyllium Seed, assignment to Youngken, Ziefle, associate. 2. Malic Acid, assignment to Krantz, John G. Roberts, associate. 3. Ephedra Vulgaris, assignment to Newcomb, O. A. Farwell, associate. 4. Potassium Sulphocyanate, assignment to E. F. Lynn, J. A. Koch, associate. 5. Bismuth Oleate, assignment to Hugo H. Schaefer, W. F. Sudro, associate. 6. Extractive Preparation containing the Glucosides of Digitalis free from inert material intended for intramuscular use, assignment to Otto Raubenheimer, E. S. Rose, associate.

"*Completed Monographs:* The report of this Committee includes three completed monographs: 1. Psyllium Seed; 2. Potassium Sulphocyanate; 3. Malic Acid. These monographs are approved by the Committee on Unofficial Standards and are recommended for publication in the JOURNAL of the AMERICAN PHARMACEUTICAL ASSOCIATION.

"*Progress of Uncompleted Work:* Dr. Rose has submitted a tentative monograph for a preparation containing the glucosides of digitalis which will be given further study by the Committee during the coming year. Dr. Schaefer reports progress on the monograph for Bismuth Oleate. Professor Fischer announced that emanating from the Sub-Committee on Botanicals the following monographs have been checked and are ready for the second presentation to the members of this Committee: 1. Ceanothus; 2. Sabadilla Seed; 3. Marrubium; 4. Cascarilla. These monographs will be completed during the ensuing year and will form a part of the Committee's report next year.

"*Plans for Future Work:* The Committee in planning its future work invites the suggestions from ASSOCIATION members interested in the establishment of standards. It is their purpose during the coming year to project our preparation of monographs and standards to some of the new and more generally used unofficial drugs."

The report was received on motion of Arny, seconded by Roach and carried.

129. Committee on Year Book. Chairman Geo. D. Beal read the following report:

"The Committee on YEAR BOOK has the honor to submit the following report.

"We realize that this ASSOCIATION must carefully weigh any change in policy before committing itself to any important step. However, in order that we may be of constantly increasing service to our members, we must at all times consider whether our activities are of such a nature that the membership receives the full benefit intended.

"It is the belief of the members of this committee, in which we believe we are supported by the Editor of the YEAR BOOK, that the ASSOCIATION, including the rank and file of both professional and scientific workers, do not benefit from the Report on the Progress of Pharmacy in its current form to an extent to warrant the present expenditure of money and effort. We are fully appreciative of the extent to which the ASSOCIATION profits in reputation by the appearance in libraries of this comprehensive summary. We realize that we have in the YEAR BOOK a scholarly report on the past research and professional activities of Pharmacy. At the same time, however, we feel that pharmacists to-day should be more promply informed of the progress that is being made in the science, art and business of Pharmacy. Once the pharmacist begins to depend upon the publications of other agencies than his own ASSOCIATION, the value of the ASSOCIATION to him is sensibly diminished.

"The report on The Progress of Pharmacy need not be so broadly representative of the related sciences as are Chemical and Biological Abstracts. We do feel that comprehensive abstracts of papers dealing with inorganic, analytical, organic, physical and physiological chemistry as related to Pharmacy, and with pharmaceutical botany, pharmacognosy, pharmacology, the art of pharmacy, and public health and preventive medicine, as well as those commercial and legal matters affecting Pharmacy as a profession should be more promptly prepared and published. Your Committee therefore presents three plans for your consideration:

"1. Let the ASSOCIATION bend every effort and give every encouragement to the speedier publication of the YEAR BOOK. This will involve the assignment of articles to be abstracted in monthly installments, the organization of a larger corps of abstractors, the follow-up of assignments to bring them in within the monthly deadline, the regular preparation by the Editor of the abstracts in form for publication, and the encouragement of the abstractors by the payment of a modest space-rate for abstracting work as a means of more certainly establishing a definite obligation on their part.

"Against this plan we can cite objections as follows: Some of the material appearing will inevitably be at least fifteen months old, the strongest incentive to prompt preparation of abstracts will still be lacking, the ASSOCIATION will still be put to the cost of binding the Report, and the Bound Report still cannot be mailed at the periodical rate of postage.

"2. Let the ASSOCIATION substitute for the Report on the Progress of Pharmacy in its present form a monthly abstract section in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. This section should be devoted to abstracts of the current literature of Pharmacy, having the same scope as that intended for the YEAR BOOK. The preparation of the abstracts should be carried out under the direction of an editor or associate editor, by a corps of abstractors as suggested above for the YEAR BOOK. The Editor having estimated that the number of articles now abstracted is in the neighborhood of 2000, the number of abstracts to be prepared and published monthly will range from 160 to 180, the additional journal space required will be from 24 to 28 pages per month, and the preparation of four to five abstracts per abstractor per month would require the assistance of perhaps 40 persons.

"If this is done, we recommend that this section be given its own consecutive paging and that the official roster of the ASSOCIATION be published as a supplement to the December number of the JOURNAL together with an index to the abstracts. With this separate and consecutive paging, members desirous of preserving this report as a special volume for their libraries to continue the file of Proceedings and YEAR BOOKS need only separate the abstract sections, and the supplement, and send the collected pages out for binding. Doubtless the ASSOCIATION could arrange with the publication office for this binding to be done in uniform style for the members at cost, or could receive orders in advance for the collective volume, separates for which could be printed monthly and bound at the end of the year and furnished at cost to those placing orders.

"As advantages we see the prompt publication of abstracts and an estimated saving to the ASSOCIATION of approximately 25 per cent of the cost of the present YEAR BOOK, in addition to the prestige to be gained by including this useful section in the JOURNAL.

"The major objections are: the fact that many members will not read the abstracts as they now examine the YEAR BOOK, that they will not separate and bind the abstracts, and that the continuation of a bound Report on the Progress of Pharmacy available since approximately 1865 will be broken.

"Another serious objection is that the date for closing forms on the abstracts will of necessity coincide with that for the balance of the JOURNAL, a matter of some concern when the number of contributing abstractors is considered.

"3. Let the ASSOCIATION begin the publication of a new periodical, to be known as Pharmaceutical Abstracts, the scope of which will be that intended for the

YEAR BOOK or the abstract section of the JOURNAL. To this may be added the scientific articles now appearing in our JOURNAL, leaving the latter for the general business of the ASSOCIATION, public and official addresses, and articles dealing with commercial and dispensing Pharmacy. We believe that the name as suggested should be pre-empted by the ASSOCIATION, to be added to later as the need arose. As to the warrant for a scientific journal of Pharmacy, I need only direct your attention to the discussion now going on in the Division of Medicinal Chemistry of the American Chemical Society over the lack of a suitable place for the publication of many of their contributions.

"As advantages we point out the following:

"It would not materially increase the effort now required in the publication of the YEAR BOOK, and would make available immediately abstracts of the world's best scientific literature related to Pharmacy.

"The cost to the ASSOCIATION should not exceed materially the cost of the YEAR BOOK.

"It would make the ASSOCIATION stand pre-eminently for Scientific as well as Practical Pharmacy.

"It would give to American Pharmacy a scientific journal second to none.

"It would bring to the membership roster, or to the subscription list, the names of individuals who are not now appreciative of the work of the ASSOCIATION or of the JOURNAL.

"It would place the name of the ASSOCIATION on the shelf list of every important technical library of the country, and of many in other countries, where it is not to be found at present.

"It would increase, to some extent, the advertising income of the ASSOCIATION.

"*Recommendations:* The Committee on YEAR BOOK submits these three propositions on their merits, but without recommendation. It is only fair to the Committee, however, to say that our preference is for prompt publication of scientific reports, and that we believe that American Pharmacy can justify the scientific journal."

On motion of Arny, seconded by Bradley, the report was received and the committee continued. After a general discussion, it was moved by Arny that the Committee on YEAR BOOK be authorized to continue their study with the object of issuing an abstract journal as soon as this is feasible.

130. American Council on Pharmaceutical Education. The secretary reported that he was advised that the N. A. B. P. and the A. A. C. P. had approved the formation of the Council, and that the A. PH. A. had been requested to name three members to represent it in order that an organization meeting of the Council might be held in Toronto. After discussion President Adams announced the appointment of E. F. Kelly for six years, D. F. Jones for four years, and H. A. B. Dunning for two years, as the members of the Council to represent the A. PH. A.

131. Election of Members. The following applicants were elected to membership on motion of Dunning, seconded by Caspari and carried: No. 336, Harry G. Banzhof, R. D. No. 4, Stroudsburg, Pa.; No. 337, Wolfgang Schnellback, P. O. Box 8, Linden, N. J.; No. 338, Earl Gunther, 404 Taylor St., Portland, Oreg.; No. 339, Edwin A. Robison, 825 Tillamook St., Portland, Oreg.; No. 340, Haney J. Donnell, 324 Alder St., Portland, Oreg.; No. 341, Ruth MacFarlane, North Pacific College, Portland, Oreg.; No. 342, Agnes Short, 63 Garden St., Saint John, N. B.; No. 343, Berl William Wager, 453 New St., Lebanon, Pa.

The Third Meeting of the Council then adjourned.

FOURTH MEETING OF THE COUNCIL.

The Fourth Meeting of the Council was held at the Royal York Hotel, Toronto, on Friday evening, August 26, 1932, with the following members present: Hilton, Adams, Beal, Caspari, Arny, Bradley, Holton, Eberle, DuMez, Roach and Kelly.

The minutes of the Third Meeting were read and adopted as read.

132. Appropriation for Second Edition Standardized Plant Names. On recommendation

of the Committee on Horticultural Nomenclature, as referred to the Council by the House of Delegates, an appropriation of $25.00 was approved for inclusion in the budget for 1933, on motion of DuMez, seconded by Holton and carried.

133. Committee on Publications. A recommendation included in the report of the Section on Historical Pharmacy and referred to the Council by the House of Delegates, that certain photographs be printed in original colors if possible, was referred to the Committee on Publications on motion of Adams, seconded by Roach and carried.

134. Committee on Research, Award. Chairman Arny reported that the proposed award for the study of drug extraction was announced to the A. A. C. P. and others, that only one request was received, and that after consideration by the Committee the award of $1000 was made to the University of Florida which will appoint an advisory committee, with Dr. W. J. Husa as Chairman, to direct the work and to coöperate with the special advisory committee from the Committee on Research. After discussion, the award was approved, on motion of Holton, seconded by Caspari and carried.

There being no further business, Chairman Hilton declared the Council of 1931–1932 adjourned with an expression of appreciation to its members.

E. F. KELLY, *Secretary.*

THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1932–1933.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 1.

September 8, 1932.

To the Members of the Council:

The reorganization and First Meeting of the Council 1932–1933 was held in the Royal York Hotel, Toronto, Canada, on Friday, August 26, 1932, beginning at 10:25 P.M.

1. The roll was called and the following were present: Arny, Bradley, Hilton, Hunsberger, Beal, Caspari, Philip, Jones, Holton, Kelly, Eberle, DuMez and Slocum.

2. Election of Chairman. S. L. Hilton was elected Chairman of the Council for 1932–1933 on motion of Beal seconded by Caspari and carried.

3. Election of Vice-Chairman. C. H. LaWall was elected Vice-Chairman of the Council for 1932–1933 on motion of Arny, seconded by Bradley and carried.

4. Election of Editor of the Journal. E. G. Eberle was elected Editor of the JOURNAL for 1932–1933 on motion of Holton, seconded by Beal and carried.

5. Election of Editor of the Year Book. A. G. DuMez was elected Editor of the YEAR BOOK for 1932–1933 on motion of Eberle, seconded by Arny and carried.

6. Membership of the Council. The membership and officers of the Council for 1932–1933 are as follows:

ELECTED MEMBERS.

H. V. Arny, 115 W. 68th St., New York, N. Y. (Term expires 1933.)
T. J. Bradley, 179 Longwood Ave., Boston, Mass. (Term expires 1933.)
W. B. Day, 715 S. Wood St., Chicago, Ill. (Term expires 1933.)
H. A. B. Dunning, Charles and Chase Sts., Baltimore, Md. (Term expires 1934.)
S. L. Hilton, 1033 Twenty-Second St., N. W., Washington, D. C. (Term expires 1934.)
Ambrose Hunsberger, 1600 Spruce St., Philadelphia, Pa. (Term expires 1934.)
J. H. Beal, Fort Walton, Fla. (Term expires 1935.)
C. E. Caspari, Euclid and Parkview Aves., St. Louis, Mo. (Term expires 1935.)
C. H. LaWall, 214 S. 12th St., Philadelphia, Pa. (Term expires 1935.)

EX-OFFICIO MEMBERS.

W. Bruce Philip, 557 Munsey Building, Washington, D. C.
Rowland Jones, Gettysburg, S. Dak.
G. H. Grommet, 2364 S. W. 11th St., Miami, Fla.
E. F. Kelly, 10 West Chase St., Baltimore, Md.

C. W. Holton, Box 81, Essex Fells, N. J.
J. W. Slocum, 404 W. Ashland Ave., Indianola, Iowa.
E. G. Eberle, 10 W. Chase St., Baltimore, Md.
A. G. DuMez, Lombard and Greene Sts., Baltimore, Md.

OFFICERS OF THE COUNCIL.

S. L. Hilton, *Chairman.*
C. H. LaWall, *Vice-Chairman.*
E. F. Kelly, *Secretary.*

7. Finance Committee. Chairman Hilton appointed T. J. Bradley, Chairman, C. H. LaWall and C. W. Holton as members of the Committee on Finance, and these appointments were confirmed on motion of Beal, seconded by Eberle and carried.

8. Committee on Property and Funds. The personnel of this Committee, as provided for in the Council By-Laws, is as follows for 1932–1933: W. B. Philip, C. W. Holton, S. L. Hilton, T. J. Bradley and E. F. Kelly.

9. Committee on Publications. Chairman Hilton appointed H. V. Arny, C. H. LaWall and W. B. Day as members of the Committee, the other members being E. G. Eberle, E. F. Kelly, A. G. DuMez and C. W. Holton as provided in the By-Laws.

These appointments were confirmed on motion of Beal seconded by Philip. Chairman Hilton appointed A. G. DuMez as chairman of the Committee on Publications.

10. Committee on Standard Program. The chairman appointed S. L. Hilton, T. J. Bradley and E. F. Kelly as members of the Committee on Standard Program.

11. Committee on Year Book. The chairman announced that this committee had been continued by action of the Council 1931–1932 with the following membership: Geo. D. Beal, Chairman, F. W. Nitardy, H. W. Youngken, E. N. Gathercoal, E. E. Swanson, W. L. McCloskey and J. C. Krantz, Jr.

12. Executive Committee of the Council. It was moved by Beal that the chairman be authorized in case the occasion should arise to appoint an Executive Committee consisting of seven members. The motion was seconded by Arny and carried.

13. Committee on Pharmaceutical Research. On motion of Bradley, seconded by Arny and carried, J. A. Koch and Glenn L. Jenkins were elected members of this Committee to serve until 1937.

14. Commission on Proprietary Medicines. S. L. Hilton was elected a member of this Commission to serve until 1937, on motion of Beal, seconded by Slocum and carried.

15. Committee on Unofficial Standards. On motion of Caspari, seconded by Arny and carried, W. F. Sudro, H. H. Schaefer, H. W. Youngken and E. L. Newcomb were elected members of the committee for a term of four years.

16. Appointment of Standing and Special Committees and Delegates of the Association. The president was authorized, on motion of Beal, seconded by Caspari and carried, to make such appointments as are now authorized, to fill vacancies as they may occur, and to make additional appointments as may be necessary or advisable, during the year.

17. Committee on Recipe Book. After a general discussion, it was moved by Bradley that the Committee on Recipe Book be continued for one year. The motion was seconded by Caspari and carried.

18. Canadian Membership in A. Ph. A. After a general discussion in which it was mentioned that the name originally suggested for the A. PH. A. was the "National Pharmaceutical Association" and that American was adopted for National to emphasize its inter-national character and scope, the president and secretary were requested, on motion of Beal, seconded by Arny and carried, to address a communication to the Canadian Pharmaceutical Association and through it to the several provincial organizations, calling attention to the eligibility of Canadian pharmacists in the A. PH. A. and cordially inviting them to join, emphasizing that the A. PH. A. is devoted to pharmacy in its broadest aspects and that the invitation is extended with no intention to interfere with the work of the Canadian organizations but rather to supplement it in respect particularly to matters of continental interest.

19. Interchange of Fraternal Delegates. After discussion of the advantages of closer relations with the Pharmaceutical Society of Great Britain, the Canadian Pharmaceutical As-

sociation, and the Ontario Retail Druggists Association, the president and secretary were requested on motion of Beal, seconded by Bradley and carried, to cordially invite these organizations to send fraternal delegates to the meeting of the A. PH. A. in Madison, Wis., in 1933.

20. International Pharmaceutical Federation. The secretary reported that an invitation was extended to the Federation to hold its 1933 meeting in or near Chicago and just prior to or following the A. PH. A. meeting, and that the invitation was acknowledged and that correspondence with respect to it was being continued.

The meeting then adjourned.

E. F. KELLY, *Secretary.*

OMISSIONS.

On account of the Association reports, addresses etc., it is necessary to omit several departments of the JOURNAL *from this issue.*

Progress at the Headquarters' Site.—On the left, the National Academy of Sciences shows the location of the grounds, and the activities preparatory to laying the foundation of the Pharmacy Building are shown in both pictures.—*Courtesy of S. L. Hilton.*

PHARMACY WEEK BEGINS OCTOBER NINTH.

Pharmacy Week presents an opportunity for pharmacists to interest the public in the service pharmacy renders. The maps of former years are still being used by schools and by libraries and clubs—this year it is a Medicinal Plant Map that will serve as the background of Pharmacy Week windows and the foreground should show growing plants and drugs derived from them. A general suggestion is embodied in the following:

Nearly all of the growers of garden-flowering plants list many medicinal species. It is not necessary, however, to obtain supplies from the florist, although this may be done. Several hundred seeds and fruits are used in medicine as drugs. A large number of these, as taken right out of the drug stock, will grow. The following are to be found in the drug stocks of most pharmacies and are suitable for pharmacists to experiment with. Half a dozen boxes representing some of these seedlings, displayed in a window or on a counter, and properly labeled will arouse much favorable comment and interest: anise, fennel, ripe orange seed, psyllium seed (*Plantago lanceolata* yielding French Psyllium is the common buckhorn so troublesome in our lawns), hemp seed (soak in luke-warm water first), capsicum (seed from fruit—some will grow, a little slowly), caraway, flaxseed, American wormseed (some will grow from fresh fruit drug), coriander, castor oil beans (file or cut through the seed-coat slightly—will grow if fresh), black mustard and yellow mustard (very easy), stramonium seed (soak first—some of commercial drug seed will grow), celery fruit, poison hemlock fruit and annual larkspur or delphinium. Practically all of these seeds yield medicinal plants from which U. S. P. or N. F. drugs are derived. When the seedlings begin to come up, display with the growing plants some of the whole drug and bottles of the preparation in which the drug is used. If the plant is illustrated on the Medicinal Plant Map, connect the growing plants with the illustration on the map.

Secure a map, if you have not done so from your Wholesale Druggist. It represents the finest work in modern lithography, 44 inches by 64 inches in size and carries reproductions of 125

important medicinal plants. On the face of the map appear illustrations of the more important medicinal plants growing native or cultivated in the United States. Around the border appear illustrations of the more important medicinal plants of foreign origin. The use of nine colors in the map brings out all of the brilliant hues and colors of the flowers, fruits and other parts of the plants. Under each illustration appears a legend giving the common and Latin name of the plant, its use in medicine and information as to where the plant is native. On the face of the map in a large box appears a message to the public on the importance of the services of pharmacy.

Chairman Anton Hogstad, Jr., of the National Pharmacy Week Committee, 161 Sixth Ave., New York City, coöperates with the National Wholesale Druggists' Association, 51 Maiden Lane, New York City, in an effort to have these displays more generally used by retail pharmacists. Prizes are offered by state and local associations for best displays and the Federal Wholesale Druggists' Association offers a grand prize in the form of a silver cup for the best Pharmacy Week window display in the United States.

President Hoover has on two occasions issued Pharmacy Week proclamations and there will be messages from Governors of states; newspapers should be interested and supplied with stories, clubs addressed, messages broadcasted.—Address the National Pharmacy Week Committee, 161 Sixth Ave., New York City, for information.

PHARMACY WEEK PRIZE WINDOWS.

The secretary of each state pharmaceutical association will receive all photos to be entered in the contest from his state, and will then forward to National Pharmacy Week Headquarters, 161 Sixth Avenue, New York, N. Y., the best display in that group. He may determine the best display by a state contest or other method which he or his association may select. No photographs may be sent direct by the contestants to National Pharmacy Week Headquarters, but must be mailed to the state secretary for competition in state contests. Winners of state contests are then entered in the national contest. Photographs must show the entire window and be large enough to exhibit details of the display plainly; 8 by 10 is the ideal size photo, but 5 by 7 photos will be acceptable. Manufactured pharmaceutical, chemical and biological products related to the practice of pharmacy may be displayed, but competing windows must be noncommercial. Price tags must not be used. Merchandise unrelated to pharmacy must not be displayed.

Drug Maps can be obtained without cost from Wholesale Druggists; the National Wholesale Druggists' Association, 51 Maiden Lane, New York City, will mail a copy on receipt of 50 cents; mounted maps are supplied for $3.00 each.

LIST OF REGISTRANTS, ANNUAL MEETING, A. PH. A., TORONTO, CANADA.

(Canadian-American Pharmaceutical Convention.)

List of Registrants in attendance at the Eightieth Annual Meeting, A. PH. A.—Corrections and additions respectfully requested; please address JOUR. A. PH. A., 10 W. Chase St., Baltimore, Md.

ADAMS, WALTER D., MR. AND MRS., Forney, Texas.
AMBROZ, W. F., Indianapolis, Ind.
AMES, H. I., MISS, Medford, Mass.
AMRHEIN, P. J., Brookline, Mass.
ANDERSON, O., Indianapolis, Ind.
ANDREWS, MARVIN J., MR. AND MRS., Baltimore, Md.
ARNOLD, H. C. F., Floral Park, N. Y.
ARNY, H. V., DR. AND MRS., New York City.

BACHMAN, GUSTAVE, Minneapolis, Minn.
BACON, EDWARD W., Philadelphia, Pa.
BACON, F. J., MR. AND MRS., Cleveland, Ohio.
BABR, LILLIAN, Boston, Mass.
BALLARD, C. W., MR. AND MRS., Mt. Vernon, N. Y.
BAROL, A., Philadelphia, Pa.
BARRETT, LESLIE B., MR. AND MRS., New Haven, Conn.
BAUER, JOHN C., Baltimore, Md.
BEACH, D. C., Wood-Ridge, N. J.
BEAL, GEORGE D., Pittsburgh, Pa.
BEAL, JAMES H., DR. AND MRS., Ft. Walton, Fla.
BECKER, W. E., Brooklyn, N. Y.
BEIGHLY, S. R., Connellsville, Pa.
BENFIELD, H. E., Cleveland, Ohio.
BIBBINS, F. E., MR. AND MRS., Indianapolis, Ind.
BIBBINS, MRS. RUTH, Indianapolis, Ind.
BINGHAM, RALPH, Norman, Okla.
BINGHAM, W. E., Tuscaloosa, Ala.
BLOME, W. B., Detroit, Mich.
BOSLEY, JOHN O., Wilmington, Del.
BRADLEY, THEODORE Jr., Boston, Mass.
BRADLEY, THEODORE J., Boston, Mass.
BREWER, C. M., Oklahoma, City, Okla.
BREWER, MAE E., Oklahoma City, Okla.
BROWN, B. B., MR. AND MRS., AND FAMILY, Dallas, Texas.
BROWN, C. F., Fall River, Mass.
BROWN, HENRY, Scranton, Pa.
BUCKLEY, W., Toronto, Canada.
BUDINGER, MRS. CAROLINE WALTON, Williamsport, Pa.
BUEHLER, GEORGE H., Cleveland, Ohio.

BURBIDGE, MR. AND MRS. G. A., Halifax, N. S.
BURLAGE, H. M., MR. AND MRS., Chapel Hill, N. C.
BYE, MORTIMER, MR. AND MRS., Cincinnati, Ohio.

CAMPBELL, W. L., Chicago, Ill.
CANIS, O. F. A., Cedarhurst, N. Y.
CANIS, O. P. M., New York City.
CASPARI, CHARLES E., St. Louis, Mo.
CHRISTENSEN, H. C., MR. AND MRS., Chicago, Ill.
CLARK, C. C., Toronto, Ont.
CLARK, GAY, Morristown, Tenn.
CLAYTON, CHARLES J., Denver, Colo.
CLOSE, M. E., MR. AND MRS., Ada, Ohio.
COHEN, THEODORE S., Boston, Mass.
COLE, MURRAY, MR. AND MRS., Toronto, Canada.
CONGER, FRED A., St. Paul, Minn.
COOK, E. FULLERTON, Philadelphia, Pa.
COOPER, MARGARET M., Villisca, Iowa.
COOPER, ZADA M., Iowa City, Iowa.
COSTELLO, P. H., Cooperstown, N. Dak.
COUGHLAN, T. A., MR. AND MRS., Hastings, Canada.
COUGLAND, C. O., Scotts, Ont.
CROCKETT, W. G., Richmond, Va.
CURRY, G. L., Louisville, Ky.

DANDREAU, JOHN L., MR. AND MRS., New York City.
DARBAKER, L. K., MR. AND MRS., Pittsburgh, Pa.
DAVIS, H. L., MR. AND MRS., Chicago, Ill.
DAY, WM. B., MR. AND MRS., Chicago, Ill.
DEICHMILLER, H. S., Rochester, N. Y.
DELGADO, FRANK A., Washington, D. C.
DIEKMAN, GEORGE C., MR. AND MRS., New York City.
DUMEZ, A. G., DR. AND MRS., Baltimore, Md.
DUNNING, H. A. B., DR. AND MRS., Baltimore, Md.
DURHAM, E. E., Corunna, Mich.
DURHAM, GRACE, Corunna, Mich.
DURHAM, JANE, Corunna, Mich.
DUYUETTE, CHARLES, Montreal, Canada.

EBERLE, E. G., MR. AND MRS., Baltimore, Md.
EBY, FRANK H., MR. AND MRS., Springfield, Pa.
ELLIOTT, O. E. A., Willowdale, Ont.
EMANUEL, LOUIS, MR. AND MRS., Pittsburgh, Pa.
EMIG, HERBERT M., Chicago, Ill.
ENGBERG, A. E., Charleston, S. C.
EVANS, GEORGE A., MR. AND MRS., Toronto, Canada.

FARLANE, D. E., Toronto, Canada.
FENNEY, NICHOLAS W., New Haven, Conn.
FIERO, GEORGE W., MR. AND MRS., Buffalo, N. Y.
FINNERAN, J. F., MR. AND MRS., Boston, Mass.
FISCHELIS, ROBERT P., Trenton, N. J.
FISH, ERWIN L., Arcade, N. Y.
FOOTE, P. A., Gainesville, Fla.
FORD, M. N., Columbus, Ohio.
FORTIN, F. L., Montreal, Canada.
FREEMAN, LEWIS G., Buffalo, N. Y.
FREERICKS, FRANK H., Cincinnati, Ohio.
FREY, ERNEST, MR. AND MRS., Leonde, Ontario.
FRISCH, THEODORE, MR. AND MRS., St. Charles, Minn.
FUHRMANN, CHARLES J., MR. AND MRS., Washington, D. C.
FUNK, JOHN A. J., MR. AND MRS., Galveston, Ind.

GANGER, WM. H., Orono, Maine.
GANGIS, C. H., MR. AND MRS., Buffalo, N. Y.
GATHERCOAL, E. N., MR. AND MRS., Chicago, Ill.
GAYLE, J. W., Frankfort, Ky.
GERSHENFELD, LOUIS, Philadelphia, Pa.
GIDLEY, W. F., DR. AND MRS., AND FAMILY, Austin, Texas.
GIFFEN, ROBERT C., MR. AND MRS., Washington, D. C.
GILBERT, C. T., Noroton, Conn.
GILL, JAMES J., MR. AND MRS., Olneyville, R. I.
GILSON, CHARLES F., MR. AND MRS., Centredale, R. I.
GLOVER, C. C., Ann Arbor, Mich.
GLOVER, WM. H., MR. AND MRS., Lawrence, Mass.
GRAY, WM., Chicago, Ill.
GREGG, HENRY H., JR., Minneapolis, Minn.
GREGORY, WILLIS, Buffalo, N. Y.
GUSTAFSON, CARROLL B., MR. AND MRS., Arlington Hts., Mass.
GUSTAFSON, CHARLES, JR., Hartford, Conn.
GUSTAFSON, KATIE, Arlington, Mass.

HABERMAN, M., MR. AND MRS., Toronto, Canada.
HAMILTON, C. J., Kingston, Ont.
HAMMOND, ELMER L., Oxford, Miss.
HANNA, M., Findlay, Ohio.
HARDIN, N. M., Winnipeg, Manitoba.
HARRING, CARL G. A., MR. AND MRS., Newton Center, Mass.
HAVENHILL, L. D., MR. AND MRS., Lawrence, Kans.
HEEBNER, CHARLES, Toronto, Canada.
HEIN, HENRY F., San Antonio, Texas.
HELPER, ISADORE, Detroit, Mich.
HENRY, F. W., Toronto, Canada.
HEWITT, T. G., Buffalo, N. Y.
HILTON, S. L., MR. AND MRS., Washington, D. C.
HINDS, E. A., Orillia, Canada.
HINES, F. GLADSTONE, Felixstour, England.
HOCH, J. HAMPTON, MR. AND MRS., Charleston, S. C
HOGSTAD, ANTON, JR., St. Louis, Mo.
HOLTON, C. W., MR. AND MRS., Essex Fells, N. J.
HURD, J. W. HOWARD, MR. AND MRS., Flint, Mich.
HUSA, WM. J., Gainesville, Fla.

IRELAND, EDWARD J., Madison, Wis.

JACOBS, F. A., Toronto, Canada.
JENKINS, GLENN J., DR. AND MRS. GLENN L. JENKINS, AND DAUGHTER, Baltimore, Md.
JEPSON, P. J., Newton, Iowa.
JOHNSON, HENRY S., New Haven, Conn.
JONES, ROWLAND, Gettysburg, S. D.
JORDAN, C. B., DR. AND MRS., La Fayette, Ind.
JORDAN, CHARLES B., La Fayette, Ind.
JORDAN, ROBERT, La Fayette, Ind.
JORGENSEN, A. L. T., San Francisco, Calif.
JUBY, B. C., MR. AND MRS., Winnipeg, Canada.

KAGY, E. V., Des Moines, Iowa.
KAINS, ELEANOR M., Baltimore, Md.
KASSNER, HERBERT C., DR. AND MRS., New York City.
KEBLER, LYMAN F., Washington, D. C.
KEIM, R. D., Squibb Bldg., New York City.
KELLY, E. F., Baltimore, Md.
KERMONT, T. W., Duluth, Minn.
KIDDER, DR. JAMES H., New York City.
KING, A. H., MR. AND MRS., Manhattan, Kans.
KING, F. H., Delphos, Ohio.
KIRBY, FRANK B., Evanston, Ill.
KNOWLTON, E. S., Vancouver, B. C.
KOCH, J. A., DR. AND MRS., Pittsburgh, Pa.
KOTTE, BERNARD J., MR. AND MRS., Cincinnati, Ohio.
KRADWELL, G. V., Racine, Wis.
KRAMER, JOHN E., MR. AND MRS., Philadelphia, Pa.
KRANTZ, J. C., MR. AND MRS., JR., AND DAUGHTER, Baltimore, Md.
KRUMWIEDE, H. A., New Brunswick, N. J.
KRUPNICK, GERTRUDE, Boston, Mass.
KULRIGHT, G., Kansas City, Mo.

LANDER, NORMAN, B., Toronto, Ont., Canada.
LANGENHAN, H. A., Seattle, Wash.
LANWERMEYER, CHAS. F., Waukegan, Ill.
LARSON, MARTIN, Andover, S. Dak.
LASCOFF, J. L., MR. AND MRS., New York City.
LEDER, HENRI, Montreal, Canada.
LEE, C. O., MR. AND MRS., W. Lafayette, Ind.
LEE, F. A., Pittsburgh, Pa.
LEE, JOHN W., Washington, D. C.
LEHMAN, ROBERT S., MR. AND MRS., Brooklyn, N. Y.
LEIGH, T. R., DR. AND MRS., Gainesville, Fla.
LEMON, A. B., Buffalo, N. Y.
LEWIS, LAWRENCE C., Tuskegee, Ala.
LINDAHL, WALLACE, Auburn, Wash.
LINSTEAD, HUGH N., MR. AND MRS., London, England.
LINTON, W. L., Toronto, Canada.
LOFGREN, F. V., MR. AND MRS., Valparaiso, Ind.
LUNIANTS, CY., Osh Kashaw, Canada.

MAIER, A. A., New Haven, Conn.
MALTBIE, B. L., Altamonte Springs, Fla.
MANSON, ALFRED P., MR. AND MRS., Gardiner, Maine.
MANSON, HENRY, Hudson, Mass.
MARNS, THOMAS, London, England.
MARR, L. H., MR. AND MRS., Farmington, Maine.
MARTIN, LEWIS E., Chicago, Ill.
MATHER, GEORGE W., SCOTIA, N. Y.
MAYES, HERBERT R., New York City.
MEADS, WALTER F., Des Moines, Iowa.
MILNE, F. R., MR. AND MRS., Pratt, Kansas.
MILNE, MARY, Blyth, Ontario.
MOLLETT, CHARLES E. F., Missoula, Mont.
MONELL, LEON, Buffalo, N. Y.
MUIR, JOHN D., Grand Rapids, Mich.
MULDOON, HUGH C., Pittsburgh, Pa.
MULLOWNEY, JOHN J., Nashville, Tenn.
MUNCH, JAMES C., DR. AND MRS., AND DAUGHTER, Lansdowne, Pa.

NETZ, C. V., MR. AND MRS., Minneapolis, Minn.
NEWTON, H. C., MR. AND MRS., AND FAMILY, Omaha, Neb.
NICHOLS, C. V., MR. AND MRS., Memphis, Tenn.
NICKLIN, WALTER S., Alexandria, Va.
NITARDY, F. W., Brooklyn, N. Y.
NORTH, ALBERT R., London, Ont.

O'CONNELL, C. LEONARD, Pittsburgh, Pa.
OLIVER, E. B., MR. AND MRS., AND FAMILY, Longview, Texas.
OSOL, ARTHUR, MR. AND MRS., Philadelphia, Pa.

PAPERNICH, BEULAH R., Toronto, Canada.
PARADOWSKY, JOSEPH, MR. AND MRS., Kansas City, Kans.
PATCH, RALPH R., Boston, Mass.
PATTERSON, BESS, El Reno, Okla.
PATTERSON, U. R., Orillia, Canada.
PATTERSON, W. D., El Reno, Okla.
PHILIP, W. BRUCE, MR. AND MRS., Washington, D. C.
PITTENGER, SAMUEL S., Philadelphia, Pa.
POLEAT, RAY, Detroit, Mich.
POWERS, J. L., Ann Arbor, Mich.
PROUT, W. A., MR. AND MRS., Charleston, S. Car.
PURDUM, W. ARTHUR, Baltimore, Md.

RAABE, R. H., MR. AND MRS., Ada, Ohio.
RAY, JOHN B., MR. AND MRS., Abilene, Texas.
RAYFORD, J. J., MR. AND MRS., Hindman, Texas.
REIF, EDWARD C., Pittsburgh, Pa.
RHODES, GEORGE W., Newark, Del.
RICHARDS, LEON W., MR. AND MRS., Missoula, Mont.
RICHARDSON, R. N., Toronto, Canada.
RICHMOND, DAVE, Winnipeg, Canada.
RITCHIE, ALICE L., Cincinnati, Ohio.
RIVARD, W. HENRY, Providence, R. I.
RISING, L. W., MR. AND MRS., Newark, N. J.
ROACH, THOMAS, MR. AND MRS., Oklahoma City, Okla.
RODMAN, ROBERT W., MR. AND MRS., Bloomfield, N. J.
ROSE, I. W., Chapel Hill, N. C.
ROTH, H. D., Gainesville, Fla.
ROTH, S. V., MR. AND MRS., Toronto, Ont.
ROTHROCK, R. B., MR. AND MRS., Evansville, Ind.
ROWE, L. W., MR. AND MRS., Detroit, Mich.
RUDD, W. F., Richmond, Va.
RUENZEL, HENRY G., Milwaukee, Wis.
RUSSELL, O. E., MR. AND MRS., Elkhart, Ind.

SAWYER, JOHN R., Jamaica Plains, Mass.
SCHAEFER, F. C. A., MR. AND MRS., Brooklyn, N. Y.
SCHAEFER, HUGO H., MR. AND MRS., New York City.
SCHER, LEON L., MR. AND MRS., Toronto, Ont.
SCHICKS, GEORGE C., MR. AND MRS., Montclair, N. J.
SCHLICHTING, HAROLD E., Lansing, Mich.
SCHOETZOW, R. E., Brooklyn, N. Y.
SCHWARZ, A. J., Memphis, Tenn.
SCOTT, W. C., MR. AND MRS., Loggeville, N. B.
SCOVILLE, W. L., MR. AND MRS., Detroit, Mich.
SELTZER, LEONARD A., Detroit, Mich.
SEUIRIN, R., Hot Springs, Ark.
SHANGROW, WM. B., Rutland, Vt.
SHKOLNIK, SAMUEL, Chicago, Ill.
SHOWS, FRANCES, Oklahoma City, Okla.
SHOWS, J. C., Oklahoma City, Okla.
SHOWS, KATHERINE, Oklahoma City, Okla.
SIMON, J. F., New Orleans, La.
SLOCUM, J. W., Indianola, Iowa.
SISSON, JOSEPH M., Boston, Mass.
SKINNER, HERBERT, London, England.
SMILLIE, JOHN J., Toronto, Ont.
SMITH, DORIS, Toronto, Canada.
SMITH, FRANK M., Charleston, S. C.
SMITH, HARVED, Toronto, Canada.
SNODGRASS, SUSIE, Birds Eye Centre, Canada.
SNOW, CLYDE M., MR. AND MRS., Chicago, Ill.
SONNENBURG, AMELIA S., Baltimore, Md.
SOUDERN, C. W., MR. AND MRS., Madison, Wis.
STABLE, LAIRD J. STABLER, Los Angeles, Calif.
STANBURY, R. B. J., Toronto, Canada.
STEPHENS, W. W., Toronto, Canada.
STEWART, O. R., Walkersville, Ont.
STOCKING, C. H., Ann Arbor, Mich.
STOPER, JULIUS, Detroit, Mich.
STROOP, JOHN P., MONTREAL, Canada.
STROUD, GERTRUDE, Pittsburgh, Pa.
STROUD, HARRY J., JR., Pittsburgh, Pa.
STROUP, FREEMAN P., Philadelphia, Pa.
STULLER, H., MR. AND MRS., New Haven, Conn.
STURGEON, W. J., MR. AND MRS., Kittanning, Pa.
SUGGETT, C. L., Minneapolis, Minn.
SUSINGEN, DEWITT C., MR. AND MRS., China Grove, N. C.
SWAIN, ROBERT L., Baltimore, Md.
SWANSON, EDWARD E., Indianapolis, Ind.
SWISHER, MARGARET C., Buffalo, N. Y.

TAYLOR, FRANK O., Detroit, Mich.
TERRY, R. E., MR. AND MRS., Elmhurst, Ill.
THOMPSON, M. R., MR. AND MRS., AND DAUGHTER, Catonsville, Md.
TUTTLE, GEORGE, MR. AND MRS., Portland, Maine.

URDY, F. J., MR. AND MRS., St. Stephens, N. B.

VILAS, FRED L., Pierre, S. Dak.
VOSS, EDWARD, JR., Cincinnati, Ohio.

WALKER, PERCY S., Topeka, Kans.
WALTER, FRANK A., San Antonio, Texas.
WALTON, LUCIUS L., MR. AND MRS., Williamsport, Pa.
WARREN, J. D., Port Dover, Canada.
WATSON, O. P., Toronto, Ont.
WEBSTER, G. L., MR. AND MRS., Chicago, Ill.
WEINER, LOUIS, Boston, Mass.
WHAU, E. D., Toronto, Canada.
WHEELER, C. B., Hudson, Mass.
WHITNEY, HARVEY A., Ann Arbor, Mich.
WILCOX, W. D., MR. AND MRS., Philadelphia, Pa.
WILHELMI, GEORGE, MR. AND MRS., Newport, Ky.
WILSON, ROBERT C., Athens, Ga.
WIMMER, C. P., MR. AND MRS., New York City.
WIMMER, DOROTHY, New York City.
WINEBERG, L. E., Winnipeg, Canada.
WISE, JAMES W., Dover, Del.

YAMMER, HELEN B., Toronto, Canada.

ZALEWSKY, S. M., Pittsburgh, Pa.
ZOELLER, E. V., Tarboro, N. C.

Registration figures of the Toronto Convention are as follows: Canadian druggists, 247; American druggists, 305; manufacturers and travelers, 141; ladies (American), 164; Canadian, 230—total 1087. Attendance at entertainments showed 734 present at the Reception; 940 each at the Banquet and Moonlight-Sail and 1467 at Friday Night Carnival.

"Four Thousand Years of Pharmacy," by **Charles H. LaWall**, has been issued in a Japanese translation under the direction of Iwao Hino, of Ayabe, Japan, with the expert assistance of Professor Totaro Shimizu, one of the leading professional pharmacists of Japan.

Robert W. Morrison, formerly a member of the teaching staff of the University of Tennessee, has been elected Associate Professor of Pharmacology at the University of South Carolina at Columbia, S. C.

L. G. HEINRITZ.

L. G. Heinritz, well and favorably known pharmacist of Holyoke, Mass., and member of the AMERICAN PHARMACEUTICAL ASSOCIATION for more than a quarter of a century, died August 8th, aged 72 years. He was one of the organizers of the N. A. R. D. and a former president of Massachusetts Pharmaceutical Association; also, one of the incorporators of the American Druggists' Fire Insurance Company, of which he was vice-president.

Mrs. Heinritz died last year and the deceased is survived by two sons, Frederick J. and Stuart F.

Other notices had to be deferred.